

**YAMAHA**

**LB50DAC  
LB80DAC**

**SERVICE MANUAL**

EB000000

**LB50 II AC/LB80 II AC  
SERVICE MANUAL**

**©1997 by Yamaha Motor Co., Ltd.**

**First edition, March 1997**

**All rights reserved. Any reproduction or  
unauthorized use without the written  
permission of Yamaha Motor Co., Ltd.  
is expressly prohibited.**

# INDEX

**GENERAL INFORMATION**

**1**

**PERIODIC INSPECTIONS  
AND ADJUSTMENTS**

**2**

**ENGINE OVERHAUL**

**3**

**CARBURETION**

**4**

**CHASSIS**

**5**

**ELECTRICAL**

**6**

**APPENDICES**

**7**

# CHAPTER 1. GENERAL INFORMATION

<b>FEATURES .....</b>	<b>1</b>
<b>MACHINE IDENTIFICATION.....</b>	<b>5</b>
<b>EXTERNAL VIEW.....</b>	<b>6</b>
<b>SPECIFICATIONS.....</b>	<b>8</b>
GENERAL SPECIFICATIONS.....	8
MAINTENANCE SPECIFICATIONS .....	11
<b>GENERAL TORQUE SPECIFICATIONS.....</b>	<b>19</b>
<b>CABLE ROUTING.....</b>	<b>20</b>
<b>SPECIAL TOOLS.....</b>	<b>29</b>



1

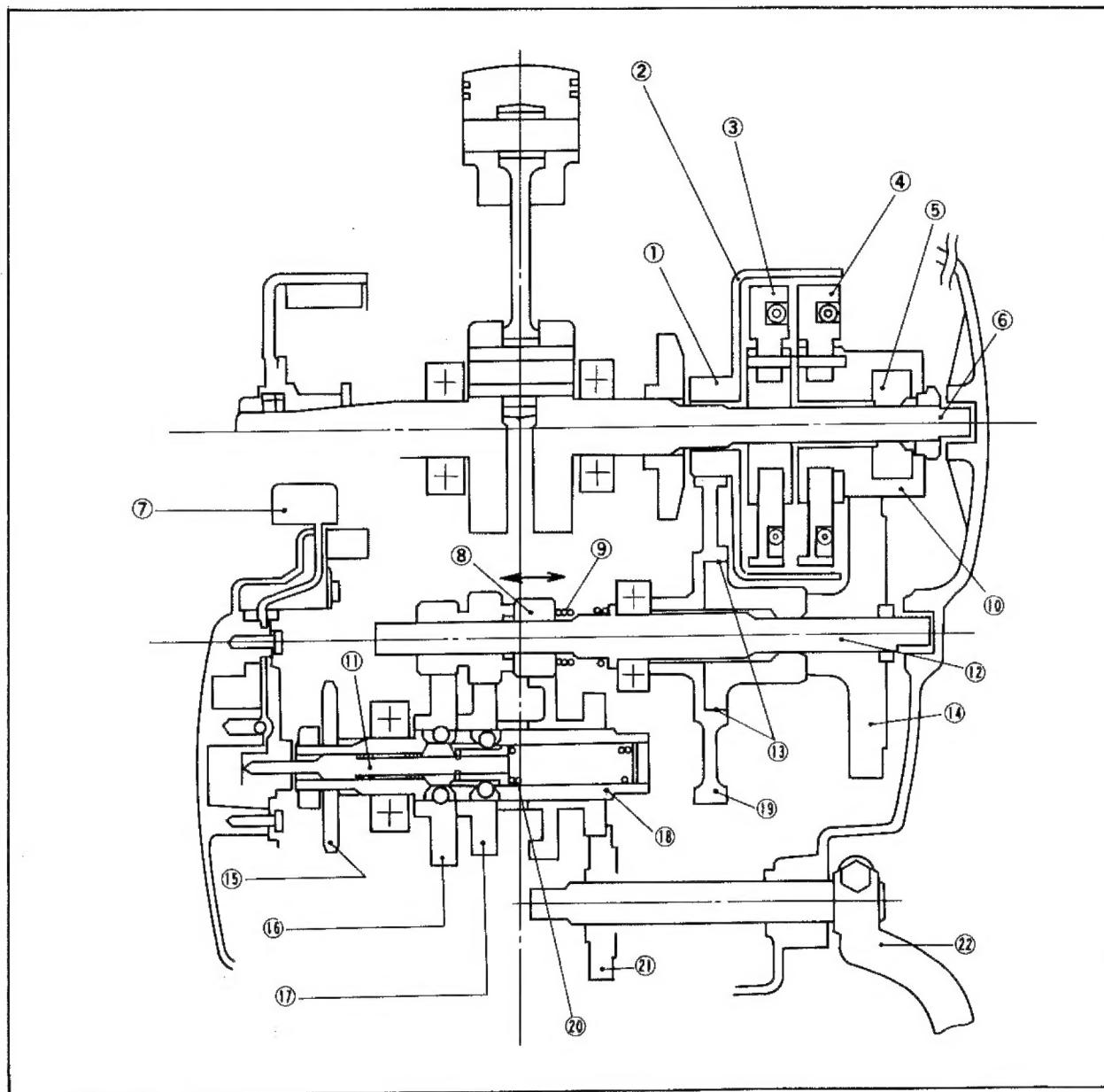


# CHAPTER 1. GENERAL INFORMATION

## FEATURES

### Automatic mechanism

1. Using a pair of shoe-type centrifugal clutches, the drive ratio is changed automatically.



1. 1st drive gear	9. Spring	16. Low range
2. Clutch housing	10. 2nd drive gear	17. High range
3. 1st clutch	11. Shift rod	18. Drive axle
4. 2nd clutch	12. Main axle	19. 1st driven gear
5. One-way clutch	13. One-way clutch	20. Spring
6. Crankshaft	14. 2nd driven gear	21. Kick gear
7. Shift lever	15. Sprocket	22. Kick crank
8. Kick pinion		

- The use of an automatic 2-speed centrifugal clutch relieves the rider from the cumbersome operation of the shift lever. That is, ease of operation and additional safety are ensured for the rider. When starting out, gears are automatically shifted into first, and then into second according to engine load. This will result in a longer life of the engine.

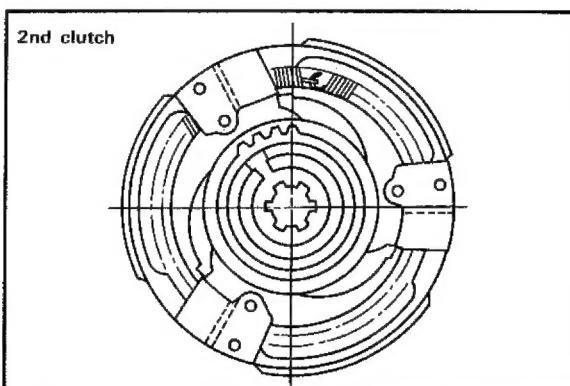
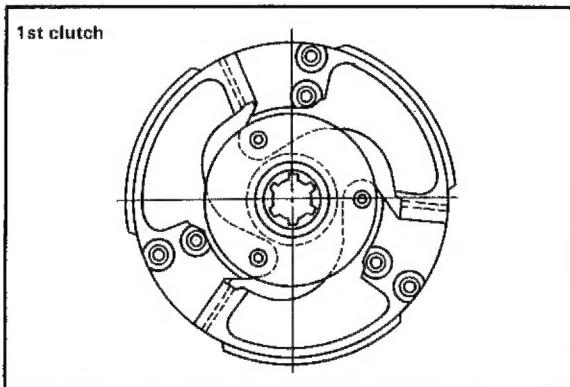
#### **Automatic transmission mechanism**

The automatic transmission mechanism consists of two shoe-type centrifugal clutches.

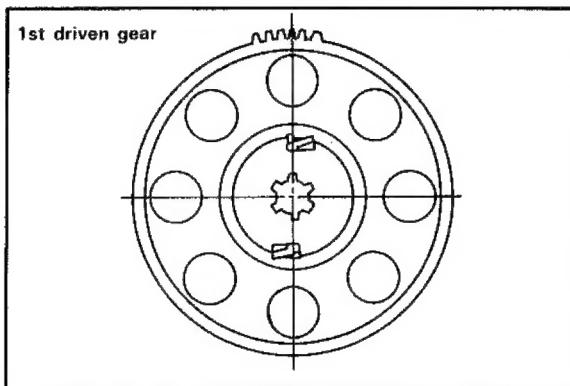
1st gear clutch: → For starting out and for 1st gear operation.

2nd gear clutch: → For automatic change to 2nd gear.

- 1. Each clutch has three clutch shoes operated by centrifugal force. These shoes are well balanced to minimize the vibration for smooth operation. This clutch is provided with linings of high wear-resistance, and thus excellent clutching power is guaranteed. The heat generated by friction between shoes and lining is quickly dissipated through the gear oil to the clutch housing, with which the clutch shoes are in contact.
- 2. The 2nd gear side is provided with an overrunning clutch.



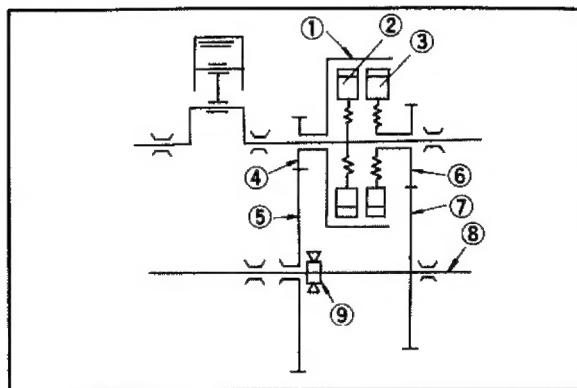
- 3. An overrunning clutch for starting is built in the hub of driven gear 1. Longer life is ensured by simple construction.



## Theory of operation

### 1. Idling

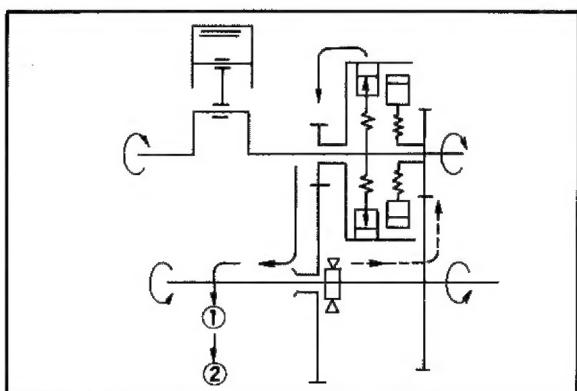
At idling, the 1st gear side clutch driven by the crankshaft is kept uncoupled by spring force, because of the centrifugal force exerted on the weights.



1. Clutch housing	6. 2nd drive gear
2. 1st clutch	7. 2nd driven gear
3. 2nd clutch	8. Main axle
4. 1st drive gear	9. One-way clutch
5. 1st driven gear	

### 2. Starting out with 1st gear

As the throttle grip is twisted open, the engine speed increases, and the spring force is overcome by the centrifugal force, and the clutch shoes are forced against the clutch housing, causing friction. As the friction increases, the turning force of the engine is transmitted to the main axle through 1st drive and driven gears.

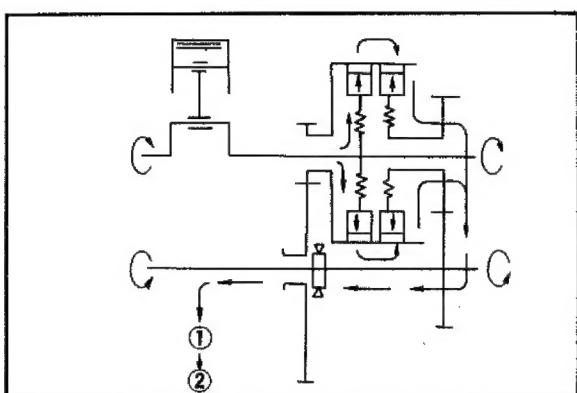


1. Subtransmission
2. Rear wheel

### 3. Reduction and 2nd gear

As the throttle grip is further opened, the 2nd side clutch begins to operate. That is, the clutch shoes are forced against the clutch housing by the weights, and thus the engine power is transmitted through 2nd drive and driven gears to the main axle.

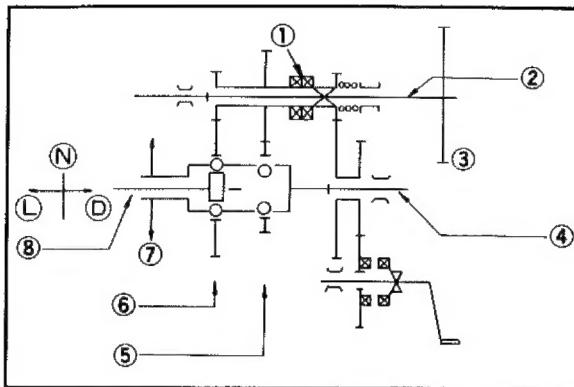
At this stage, the 1st gear side clutch is released because it is an overrunning clutch.



1. Subtransmission
2. Rear wheel

#### 4. Sub-transmission mechanism

In order to increase the engine torque required for climbing a hill with ease, this motorbike is equipped with a subtransmission.



1. Dock	5. Drive range
2. Main axle	6. Low range
3. Driven gear	7. Sprocket
4. Drive axle	8. Shift rod

#### 5. Operation of the lever

D-range:

Driving on level roads

N-range:

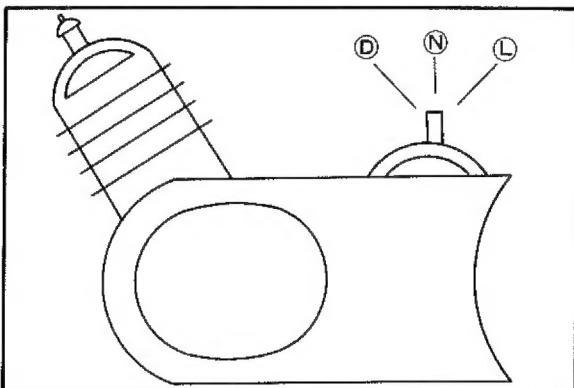
Neutral (Engine warming up)

L-range:

Climbing up a steep slope

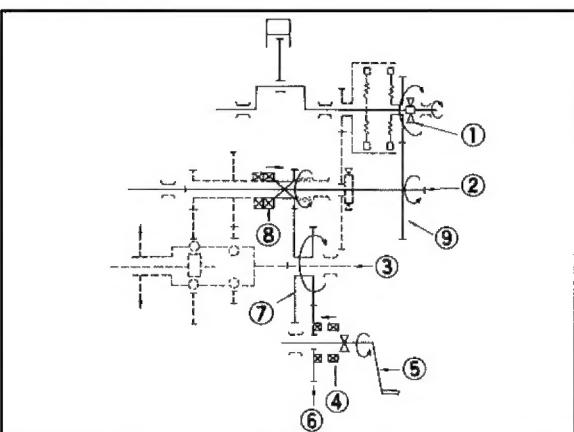
**NOTE:**

1. The shift lever must be operated at idling.
2. In order to change to the "L" range, first push down the stopper lever and then set the shift lever to "L".



#### Kick starter mechanism

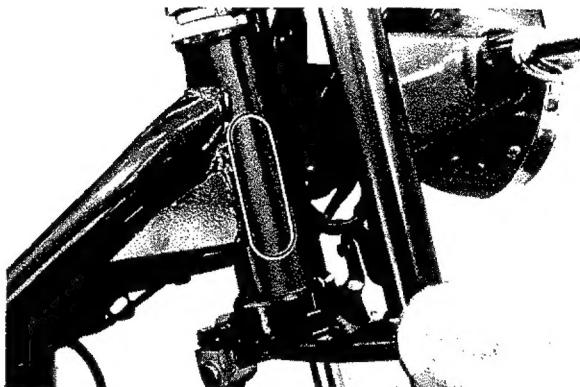
1. Both kick idle gear and kick pinion are helically meshed. When kicked, thrust is exerted on the pinion, thus causing it to move off the drive axle.
2. When the kick crank returns to its home position after the engine is started, the kick pinion is forced back by the return spring.



1. One way clutch	6. Kick gear
2. Main axle	7. Kick idle gear
3. Drive axle	8. Dock
4. Ratchet wheel	9. Driven gear
5. Kick crank	

## MACHINE IDENTIFICATION

The frame serial number is located on the right-hand side of the headstock assembly. The first three digits identify the model. This is followed by a dash. The remaining digits identify the production number of the unit.

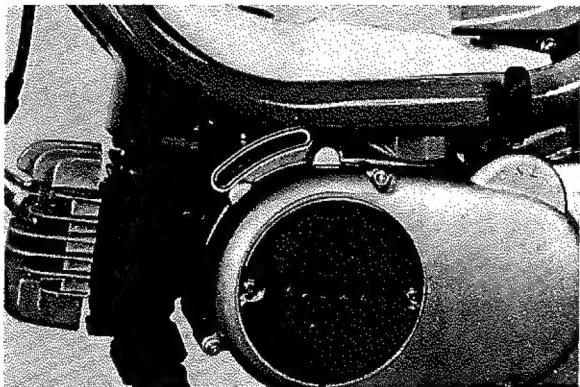


Frame serial number

The engine serial number is located on a raised boss on the upper front, left-hand side of the engine. Engine identification follows the same code as frame identification.

Normally, both serial numbers are identical; however, on occasion they may be two or three numbers off.

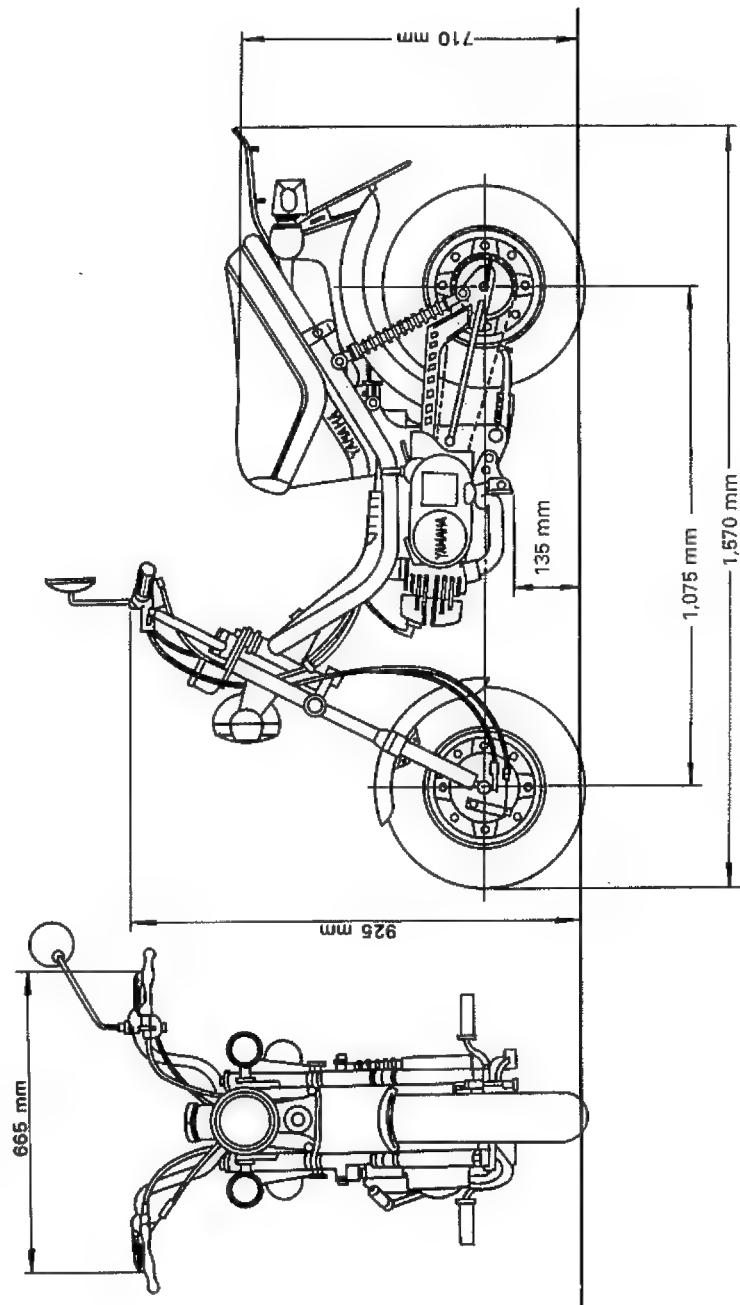
Starting Serial Number	
439-1000101	(LB50 II AC)
34H-010101	(LB80 II AC)



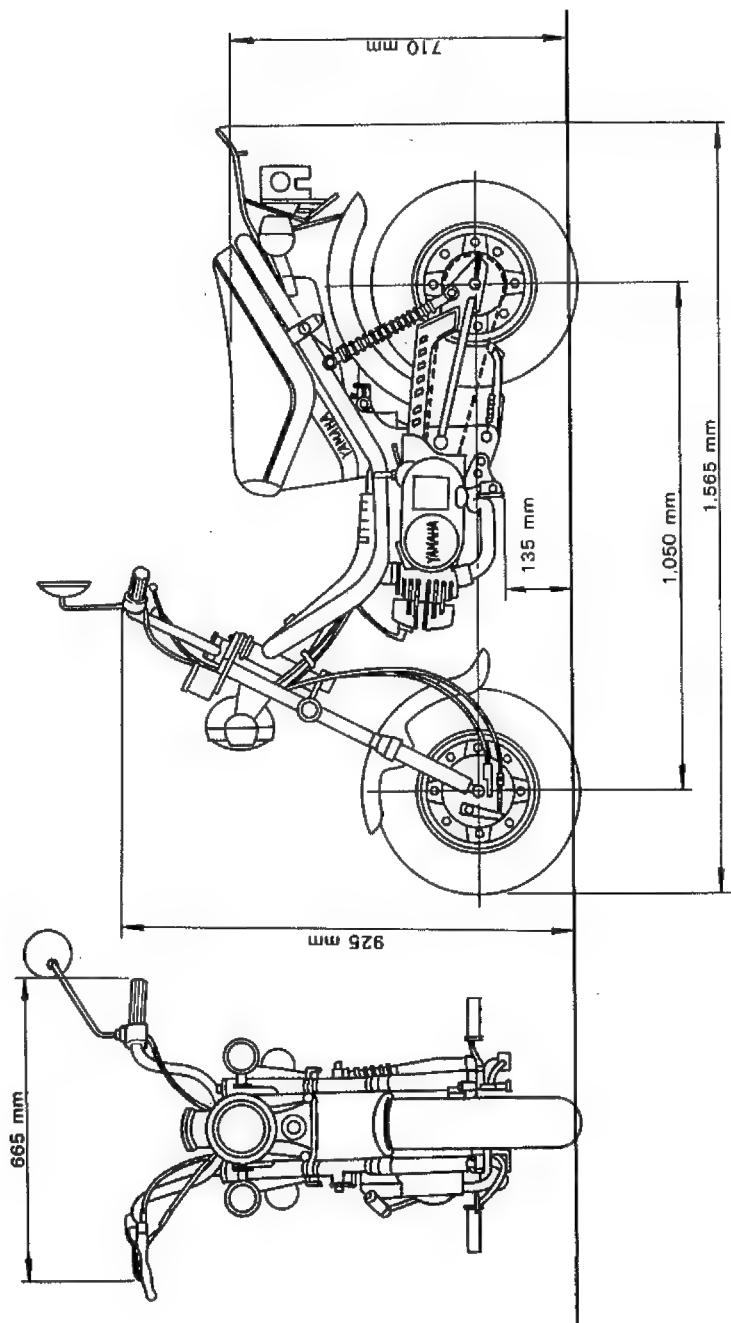
Engine serial number

**EXTERNAL VIEW**

**LB50 II AC**



**LB80IIAC**



## SPECIFICATIONS

### GENERAL SPECIFICATIONS

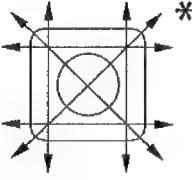
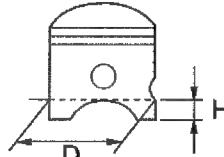
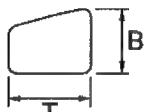
Model	LB50 II AC	LB80 II AC
Model code:	4F4	4RP
Engine starting number:	439-1000101	34H-010101
Frame starting number:	439-1000101	34H-010101
Dimensions:		
Overall length	1,570 mm	1,565 mm
Overall width	665 mm	←
Overall height	925 mm	←
Seat height	710 mm	←
Wheelbase	1,075 mm	1,050 mm
Minimum ground clearance	135 mm	←
Minimum turning radius	1,500 mm	←
Basic weight:		
With oil and full fuel tank	80 kg	76 kg
Engine:		
Engine type	Air cooled 2-stroke	←
Induction system	Torque induction	←
Cylinder arrangement	Single cylinder, forward inclined	←
Displacement	49 cm <sup>3</sup>	72 cm <sup>3</sup>
Bore × stroke	40.0 × 39.7 mm	47.0 × 42.0 mm
Compression ratio	6.6:1	5.8:1
Starting system	Kick starter	←
Lubrication system:	Separate lubrication (Yamaha autolube)	←
Oil type or grade:		
Engine oil	Air cooled 2-stroke engine oil	←
Transmission oil	SAE 10W30 type SE motor oil	←
Oil capacity:		
Oil tank (engine oil)	1.4 L	←
Transmission oil		
Periodic oil change	0.65 L	←
Total amount	0.7 L	←
Air filter:	Wet type element	←
Fuel:		
Type	Regular unlead gasoline	←
Fuel tank capacity	3.5 L	←
Fuel reserve amount	0.5 L	0.3 L
Carburetor:		
Type / quantity	VM14SC/1	VM16/1
Manufacturer	MIKUNI	←

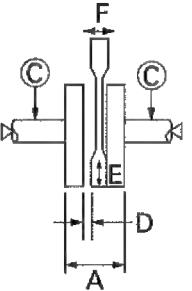
Model	LB50 II AC	LB80 II AC
Spark plug:		
Type	B6HS	←
Manufacturer	NGK	←
Spark plug gap	0.5 ~ 0.6 mm	←
Clutch type:	Wet, centrifugal automatic	←
Transmission:		
Secondary reduction system	Chain drive	←
Secondary reduction ratio	31/14 (2.214)	30/15 (2.000)
Transmission type	Constant mesh 2-speed automatic	←
Operation	Centrifugal automatic type	←
Gear ratio	1st	69/18 (3.833)
	2nd	59/28 (2.107)
Sub-transmission ratio low		39/12 (3.250)
Sub-transmission ratio high		35/16 (2.188)
		29/15 (1.933)
Chassis:		
Frame type	Steel tube underbone	←
Caster angle	26°	←
Trail	45 mm	←
Tire:		
Type	With tube	←
Size	front rear	4.00-8-4PR 4.00-8-4PR
Manufacturer	front rear	INOUE INOUE
Tire pressure (cold tire):		
Loading condition A *	front rear	0 ~ 70 kg 100 kPa (1.00 kg/cm <sup>2</sup> , 1.00 bar) 125 kPa (1.25 kg/cm <sup>2</sup> , 1.25 bar)
		0 ~ 74 kg ←
Loading condition B *	front rear	70 ~ 140 kg 100 kPa (1.00 kg/cm <sup>2</sup> , 1.00 bar) 200 kPa (2.00 kg/cm <sup>2</sup> , 2.00 bar)
		74 ~ 144 kg ← 150 kPa (150 kg/cm <sup>2</sup> , 1.50 bar)
Brake:		
Front brake	type	Drum brake
	operation	Right hand operation
Rear brake	type	Drum brake
	operation	Left hand operation
		←
		←
		←
		←

\* Load is the total weight of cargo, rider, passenger and accessories.

Model	LB50 II AC	LB80 II AC
<b>Suspension:</b>		
Front suspension	Telescopic fork	←
Rear suspension	Swingarm	←
<b>Shock absorber:</b>		
Front shock absorber	Coil spring / Oil damper	←
Rear shock absorber	Coil spring / Oil damper	←
<b>Wheel travel:</b>		
Front wheel travel	75 mm	←
Rear wheel travel	84 mm	80 mm
<b>Electrical:</b>		
Ignition system	C.D.I.	←
Generator system	Flywheel magneto	←
Battery type	6N4-2A-2	←
Battery capacity	6 V 4 AH	←
<b>Headlight type:</b>	Bulb type	←
<b>Bulb wattage × quantity:</b>		
Headlight	6 V 25 W / 25 W	←
Tail / brake light	6 V 5.3 W / 17 W	←
Flasher light	6 V 10 W × 4	←
Meter light	6 V 3 W × 1	←
High beam indicator light	6 V 3 W × 1	←
Oil level indicator light	6 V 3 W × 1	←

## MAINTENANCE SPECIFICATIONS ENGINE

Model	LB50 II AC	LB80 II AC
Cylinder head: Warp limit	0.03 mm	←
		
Cylinder: Bore size Taper limit Out of round limit	40.00 ~ 40.02 mm 0.05 mm 0.01 mm	47.00 ~ 47.02 mm ← ←
Piston: Piston to cylinder clearance <Limit> Piston size "D"	0.025 ~ 0.030 mm <0.1 mm> 39.94 ~ 40.00 mm	← ← 46.94 ~ 47.00 mm
		
Measuring point "H"	5 mm	←
Oversize 1st	40.25 mm	47.25 mm
Oversize 2nd	40.5 mm	47.5 mm
Piston off-set	0.2 mm	0.5 mm
Piston off-set direction	EX side	←
Piston pin bore inside diameter	12.004 ~ 12.015 mm	←
Piston pin outside diameter	11.996 ~ 12.000 mm	←
Piston rings: Top ring:		
		
Type	Key stone	←
Dimensions (B × T)	1.5 × 1.8 mm	2.0 × 2.1 mm
End gap (installed)	0.15 ~ 0.35 mm	←
Side clearance (installed)	0.03 ~ 0.05 mm	0.02 ~ 0.06 mm

Model	LB50 II AC	LB80 II AC
2nd ring:		
Type	Keystone	—
Dimensions (B × T)	1.5 × 1.8 mm	—
End gap (installed)	0.15 ~ 0.35 mm	—
Side clearance	0.03 ~ 0.05 mm	—
2nd ring:		
Type	Plain	—
Dimensions (B × T)	2.0 × 2.1 mm	—
End gap (installed)	0.15 ~ 0.35 mm	—
Side clearance	0.02 ~ 0.06 mm	—
Crankshaft:		
		
Crank width "A"	37.90 ~ 37.95 mm	←
Runout limit "C"	0.015 mm	←
Big end side clearance "D"	0.20 ~ 0.50 mm	←
Big end radial clearance "E"	0.004 ~ 0.015 mm	0.004 ~ 0.017 mm
Small end free play "F"	0.8 ~ 2.0 mm	←
Automatic centrifugal clutch:		
Clutch shoe thickness	2.5 mm	←
<Wear limit>	<2 mm>	←
Clutch-stall revolution	2,800 ~ 3,200 r/min	2,700 ~ 3,200 r/min
Transmission:		
Main axle deflection limit	0.015 mm	←
Drive axle deflection limit	0.015 mm	←
Kick starter:		
Kick starter type	Kick and mesh type	Ratchet type
Kick clip friction force	8.0 ~ 20.0 N (0.8 ~ 2.0 kg)	8.0 ~ 15.0 N (0.8 ~ 1.5 kg)

Model	LB50 II AC	LB80 II AC
Air filter oil grade:	Form-air-filter oil or SAE10W30 type SE motor oil	←
Carburetor:		
I. D. mark	2T5 00	1F5 01
Main jet (M.J)	#95	←
Air jet (A.J)	2.5	←
Jet needle (J.N)	3G9 / 3	←
Needle jet (N.J)	E-4	E-8
Cutaway (C.A)	2.5	←
Pilot outlet (P.O)	0.9 - 1.5	←
Pilot jet (P. J)	#17.5	#15
Air screw (A.S)	1	1-3/4
Valve seat size (V.S)	1.2	←
Starter jet (G.S.1)	#20	#25
Float height (F.H)	22.0 ± 2.5 mm	←
Engine idle speed	1,250 ~ 1,450 r/min	←
Reed valve:		
Thickness	0.15 mm	←
Valve stopper height	6.8 ~ 7.2 mm	←
Valve bending limit	0.3 mm	←
Lubrication system:		
Autolube pump:		
Plunger diameter	3.5 mm	4.0 mm
Color code	Grey	Brown
Minimum stroke	0.20 ~ 0.25 mm	0.25 ~ 0.30 mm
Maximum stroke	0.55 ~ 0.65 mm	0.80 ~ 0.95 mm
Pulley adjusting mark	At idle	←

## CHASSIS

Model		LB50 II AC	LB80 II AC
Steering system:			
Steering bearing type		Ball bearing	←
No. / size of steel balls			
	upper	22 pcs / 0.1875 in	←
	lower	19 pcs / 0.25 in	←
Front suspension:			
Front fork travel		75 mm	←
Fork spring free length		482 mm	←
Spring rate	(K1)	8.45 N/mm (0.845 kg/mm)	←
	(K2)	18.0 N/mm (1.8 kg/mm)	←
Stroke	(K1)	0 ~ 48 mm	←
	(K2)	48 ~ 75 mm	←
Optional spring		No	←
Oil capacity	left	96 cm <sup>3</sup>	←
	right	120 cm <sup>3</sup>	←
Oil grade		Fork oil 10W or equivalent	←
Rear suspension:			
Shock absorber travel		65 mm	←
Spring free length		212 mm	←
Fitting length		207 mm	←
Spring rate	(K1)	21.0 N/mm (2.1 kg/mm)	←
	(K2)	28.5 N/mm (2.85 kg/mm)	←
Stroke	(K1)	0 ~ 34 mm	←
	(K2)	34 ~ 65 mm	←
Optional spring		No	←
Swingarm:			
Free play limit	end	1 mm	←
	side	0.5 mm	←
Front wheel:			
Type		Disc wheel	←
Rim size		2.50C × 8	←
Rim material		Steel	←
Rim runout limit	radial	1 mm	←
	lateral	1 mm	←
Rear wheel:			
Type		Disc wheel	←
Rim size		2.50C × 8	←
Rim material		Steel	←
Rim runout limit	radial	1 mm	←
	lateral	1 mm	←

Model	LB50 II AC	LB80 II AC
Drive chain:		
Type / manufacturer	DK420 / DAIDO	DID420 / DAIDO
No. of links	94	88
Chain free play	20 ~ 30 mm	←
Front drum brake:		
Type	Leading, trailing	←
Brake drum inside diameter	110 mm	←
<Limit>	<111 mm>	←
Lining thickness	4 mm	←
<Limit>	<2 mm>	←
Shoe spring free length	50.5 mm	←
Rear drum brake:		
Type	Leading, trailing	←
Brake drum inside diameter	110 mm	←
<Limit>	<111 mm>	←
Lining thickness	4 mm	←
<Limit>	<2 mm>	←
Shoe spring free length	50.5 mm	←
Brake lever & brake pedal:		
Brake lever free play (at pivot)	5 ~ 8 mm	←
Brake lever free play (at lever end)	10 ~ 20 mm	←

## Tightening torques

Part to be tightened	Thread size	Tightening torque		Remarks
		Nm	m·kg	
Handlebar holder (lower) and handlebar holder (upper)	M6 × 1.25	12	1.2	
Handlebar (lower) and upper bracket	M10 × 1.25	21	2.1	
Upper bracket and steering stem	M10 × 1.25	21	2.1	
Upper bracket and inner tube	M10 × 1.25	21	2.1	
Engine mounting:				
Mounting bolt (front upper)	M8 × 1.25	18	1.8	
Mounting bolt (front side)	M8 × 1.25	18	1.8	
Mounting bolt (rear upper and rear side)	M8 × 1.25	18	1.8	
Mounting bolt (rear lower and rear side)	M8 × 1.25	18	1.8	
Front wheel axle	M10 × 1.25	39	3.9	
Rear wheel axle	M12 × 1.25	60	6.0	
Pivot shaft	M10 × 1.25	39	3.9	
Rear shock absorber and bracket	M12 × 1.25	59	5.9	
Rear shock absorber and swing arm	M12 × 1.25	59	5.9	
Tension bar and brake shoe plate	M8 × 1.25	18	1.8	
Tension bar and swingarm	M8 × 1.25	18	1.8	
Sprocket and sprocket hub	M8 × 1.25	20	2.0	
Brake camshaft lever	M6 × 1.0	7	0.7	
Wheel panel 1 and wheel panel 2	M8 × 1.25	15	1.5	
Wheel and sprocket hub	M8 × 1.25	23	2.3	
Footrest and frame	M8 × 1.25	11	1.1	
Fuel cock and stay	M6 × 1.0	4	0.4	
Muffler and frame	M8 × 1.25	9	0.9	
Front fender	M6 × 1.25	5	0.5	
Rear fender	M6 × 1.25	5	0.5	
Turn signal and stay	M8 × 1.25	10	1.0	
CDI unit	—	3	0.3	
Ignition coil	—	7	0.3	
Kick crank and kick axle	—	10	1.0	

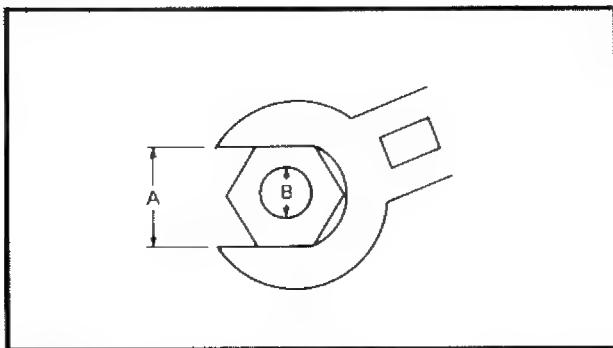
ELECTRICAL

Model	LB50 II AC	LB80 II AC
Voltage:	6 V	←
Ignition system: Ignition timing (B.T.D.C.)	22° at 5,000 r/min	←
CDI: Magneto model / manufacturer Pickup coil resistance / color Source coil resistance / color CDI unit model / manufacturer	F4GC / YAMAHA 16 ~ 24 Ω at 20°C White/Green-Black 264 ~ 396 Ω at 20°C Black/Red-Black 3UP / YAMAHA	← ← ← ←
Ignition coil: Model / manufacturer Minimum spark gap Primary winding resistance Secondary winding resistance	4RP / YAMAHA 5 mm 0.32 ~ 0.48 Ω at 20°C 5.68 ~ 8.52 kΩ at 20°C	← ← ← ←
Spark plug cap: Type Resistance	Resin type 5 kΩ	← ←
Charging system: Type	Flywheel magneto	←
Flywheel magneto: Model / manufacturer Charging current-day Charging current-night Charging coil resistance / color Lighting voltage Lighting coil resistance color	F4GC / YAMAHA 0.8 A at 3,000 r/min 2 A at 8,000 r/min 0.8 A at 3,000 r/min 2 A at 8,000 r/min 0.30 ~ 0.44 Ω at 20°C White-Black 6.2 V at 3,000 r/min 8 V at 8,000 r/min 0.2 ~ 0.3 Ω at 20°C Yellow/Red-Black	← ← ← ← ← ← ← ← ← ← ← ←
Voltage regulator: Model / manufacturer No load regulated voltage Capacity Withstand voltage	EHU01TR33 / MATSUSHITA 6.1 ~ 7.3 V 8 A 400 V	← ← ← ← ←

Model	LB50 II AC	LB80 II AC
Horn:		
Type	Plane type	←
Quantity	1	←
Model / manufacturer	GF-6 / NIKKO	←
Maximum amperage	1.5 A	←
Flasher relay:		
Type	Condenser type	←
Model / manufacturer	FR-2212 / MITSUBA	←
Self cancelling device	No	←
Flasher frequency	60 ~ 120 cycle/min	←
Wattage	10 W × 2	←
Oil level switch:		
Model / manufacturer	2T5 / STANLEY	←
Circuit breaker:		
Type	Fuse	←
Amperage for individual circuits		
Main	10 A × 1	←
Reserve	10 A × 1	←

## GENERAL TORQUE SPECIFICATIONS

This chart specifies torque for standard fasteners with standard I.S.O. pitch threads. Torque specifications for special components or assemblies are provided for each chapter of this manual. To avoid warpage, tighten multi-fastener assemblies in a criss-cross fashion, in progressive stages, until the specified torque is reached. Unless otherwise specified, torque specifications require clean, dry threads. Components should be at room temperature.



A: Distance between flats

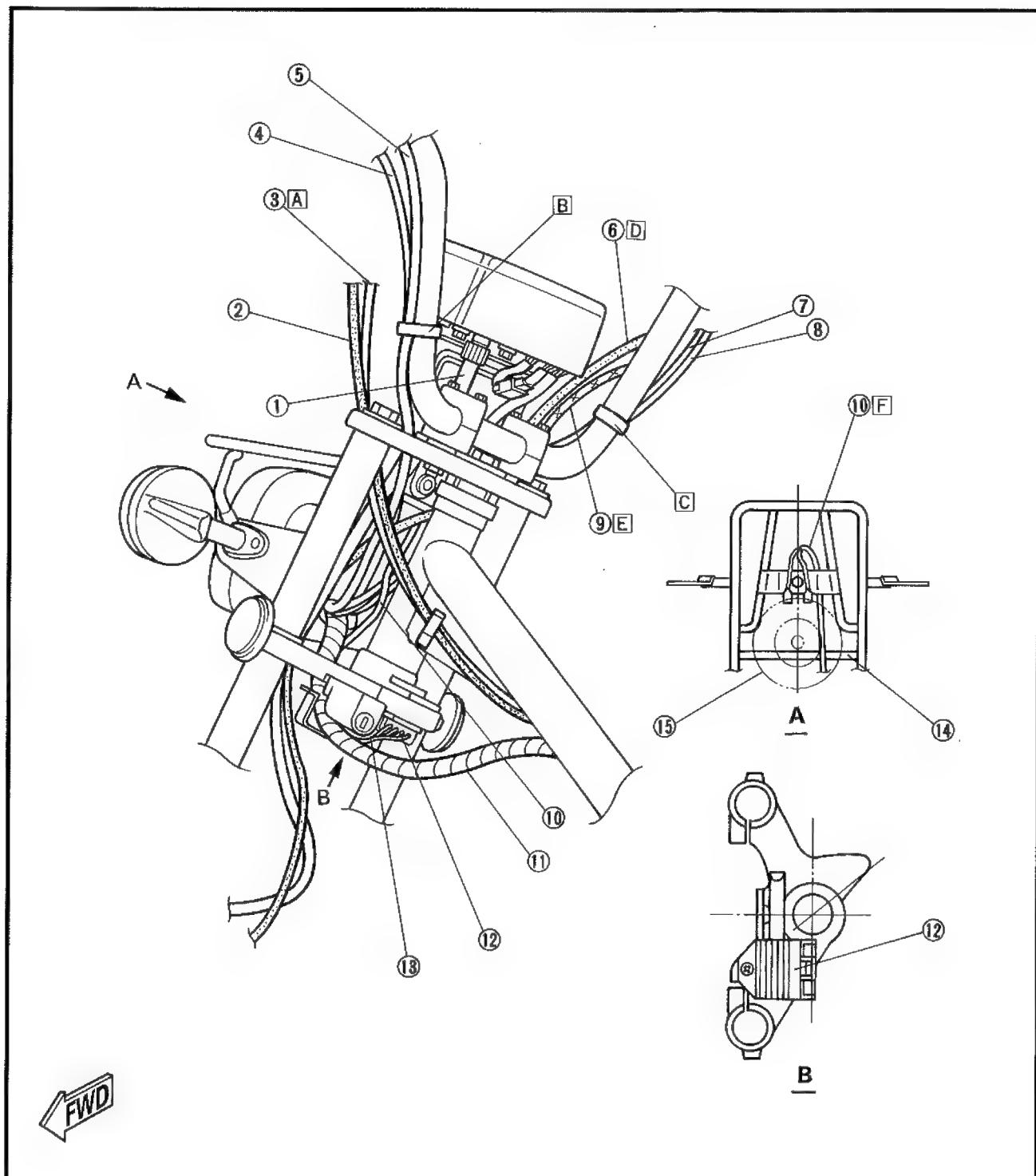
B: Outside thread diameter

A (nut)	B (bolt)	General torque specifications	
		Nm	m·kg
10 mm	6 mm	6	0.6
12 mm	8 mm	15	1.5
14 mm	10 mm	30	3.0
17 mm	12 mm	55	5.5
19 mm	14 mm	85	8.5
22 mm	16 mm	130	13.0

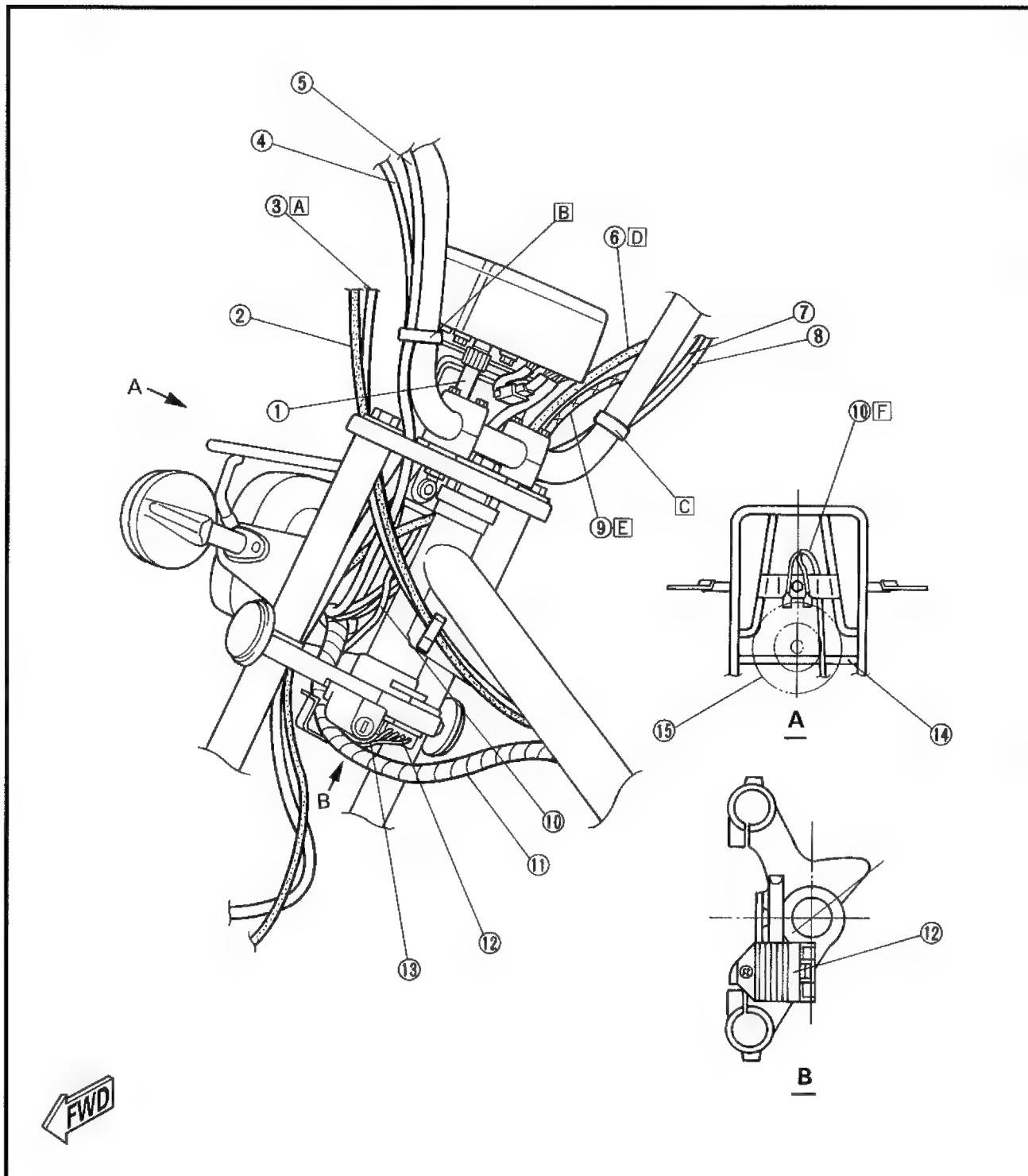
## CABLE ROUTING

- ① Speedometer cable
- ② Rear brake cable
- ③ Starter cable
- ④ Rear brake switch lead
- ⑤ Left handlebar switch lead
- ⑥ Front brake cable
- ⑦ Right handlebar switch
- ⑧ Front brake switch lead
- ⑨ Throttle cable #1

- ⑩ Horn switch lead
- ⑪ Wire harness
- ⑫ Rectifier/regulator
- ⑬ Rectifier/regulator lead
- ⑭ Cross bar
- ⑮ Horn



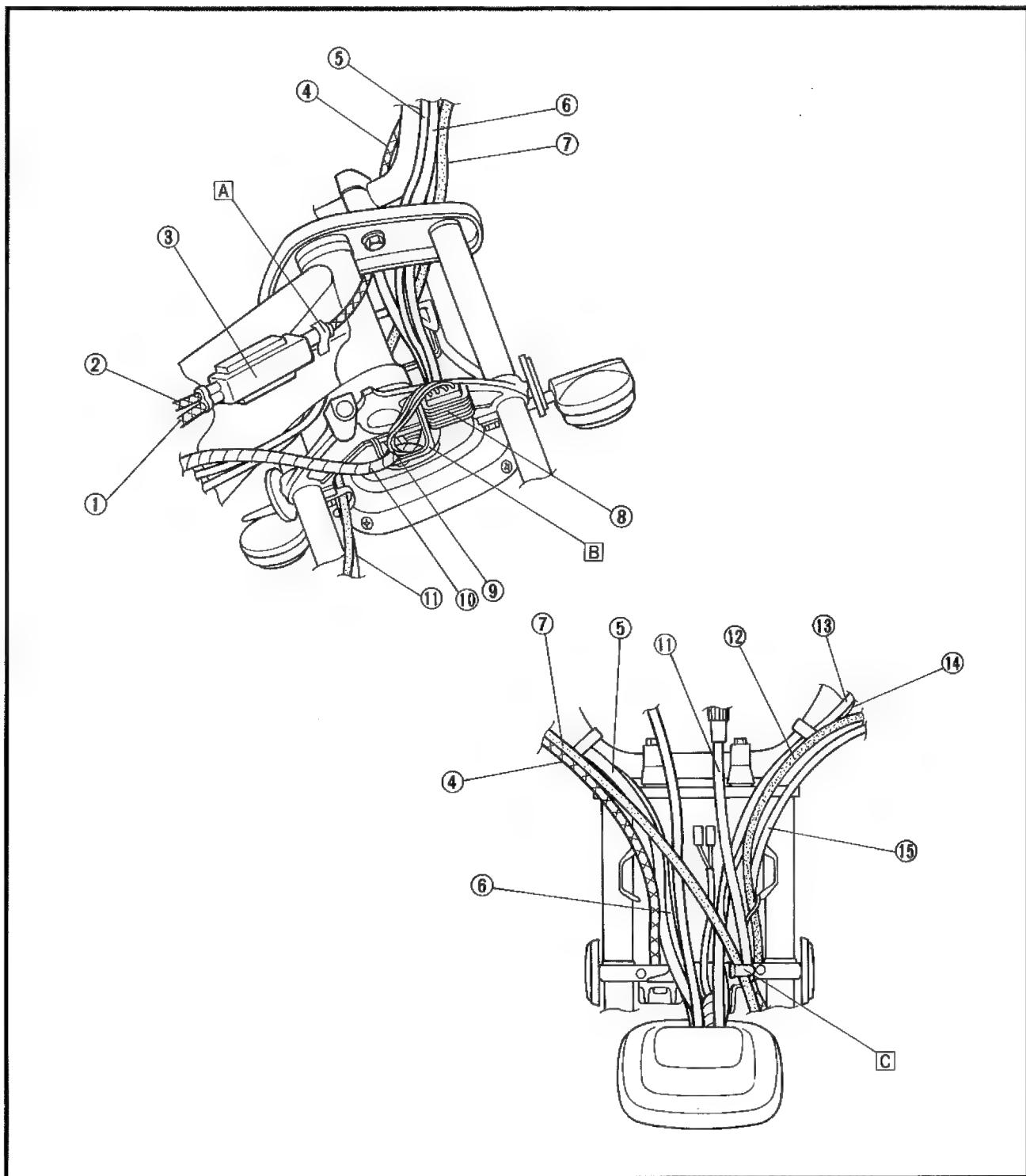
- A** Route the starter cable to the left of the speedometer cable and the left and right handlebar switch leads, and out the upper, left side of the vehicle.
- B** Fasten the rear brake switch lead and left handlebar switch lead with a plastic looking tie.
- C** Fasten the right handlebar switch lead and front brake switch lead with a plastic locking tie.
- D** Route the front brake cable to the right of the speedometer, under the speedometer cable, and out the lower, left side of the vehicle.
- E** Route the throttle cable #1 to the right of the speedometer cable and out the lower, left side of the vehicle.
- F** Route the horn switch lead in front of the cross bar **(4)** and over the horn bracket.



- ① Autolube pump cable
- ② Throttle cable #1
- ③ Throttle cable junction box
- ④ Throttle cable #2
- ⑤ Right handlebar switch lead
- ⑥ Front brake switch lead
- ⑦ Front brake cable
- ⑧ Rectifier/regulator
- ⑨ Rectifier/regulator lead
- ⑩ Wire harness

- ⑪ Speedometer cable
- ⑫ Rear brake cable
- ⑬ Left handlebar switch lead
- ⑭ Rear brake switch lead
- ⑮ Starter cable

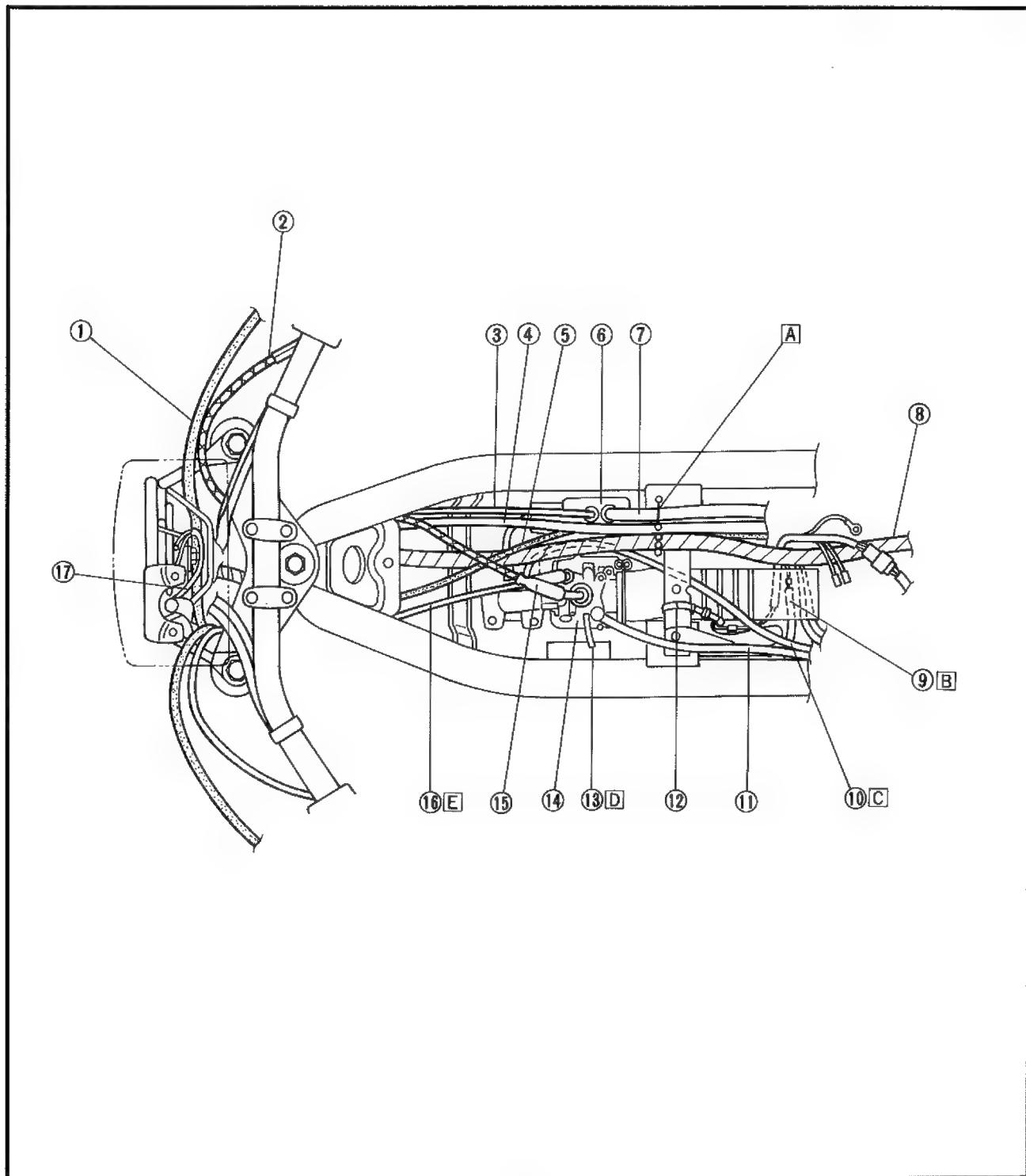
**A** Fasten the wire cylinder.  
**B** Pass the rectifier/regulator lead and wire harness through the cable guide.  
**C** Faster the front brake cable and speedometer cable.



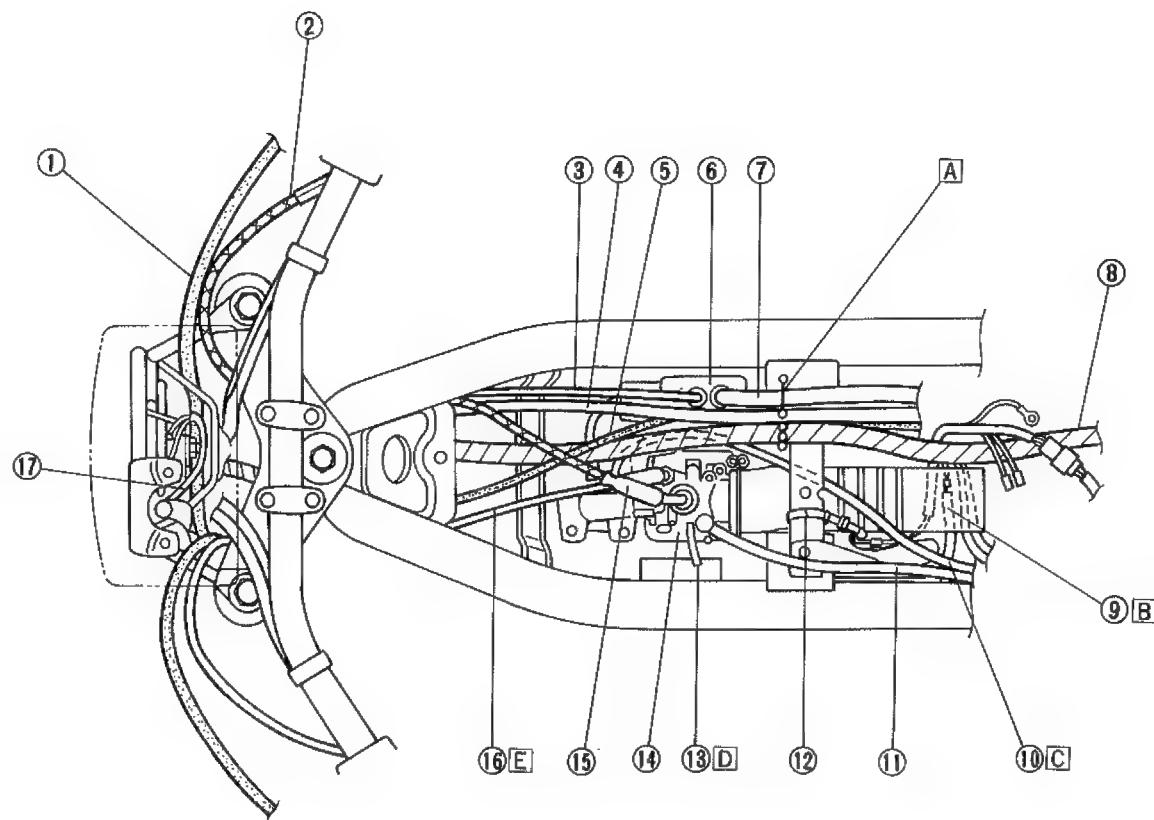
- ① Front brake cable
- ② Throttle cable #1
- ③ Autolube pump cable
- ④ Spark plug lead
- ⑤ Rear brake cable
- ⑥ Autolube pump
- ⑦ Oil feed hose
- ⑧ Wire harness
- ⑨ CDI magneto lead
- ⑩ Fuel cock vacuum hose
- ⑪ Fuel hose

- ⑫ Band
- ⑬ Mixing chamber air vent hose
- ⑭ Carburetor
- ⑮ Throttle cable #2
- ⑯ Starter cable
- ⑰ Horn switch lead

**A** Fasten the spark plug lead, rear brake cable, oil feed hose and wire harness with a plastic clip.



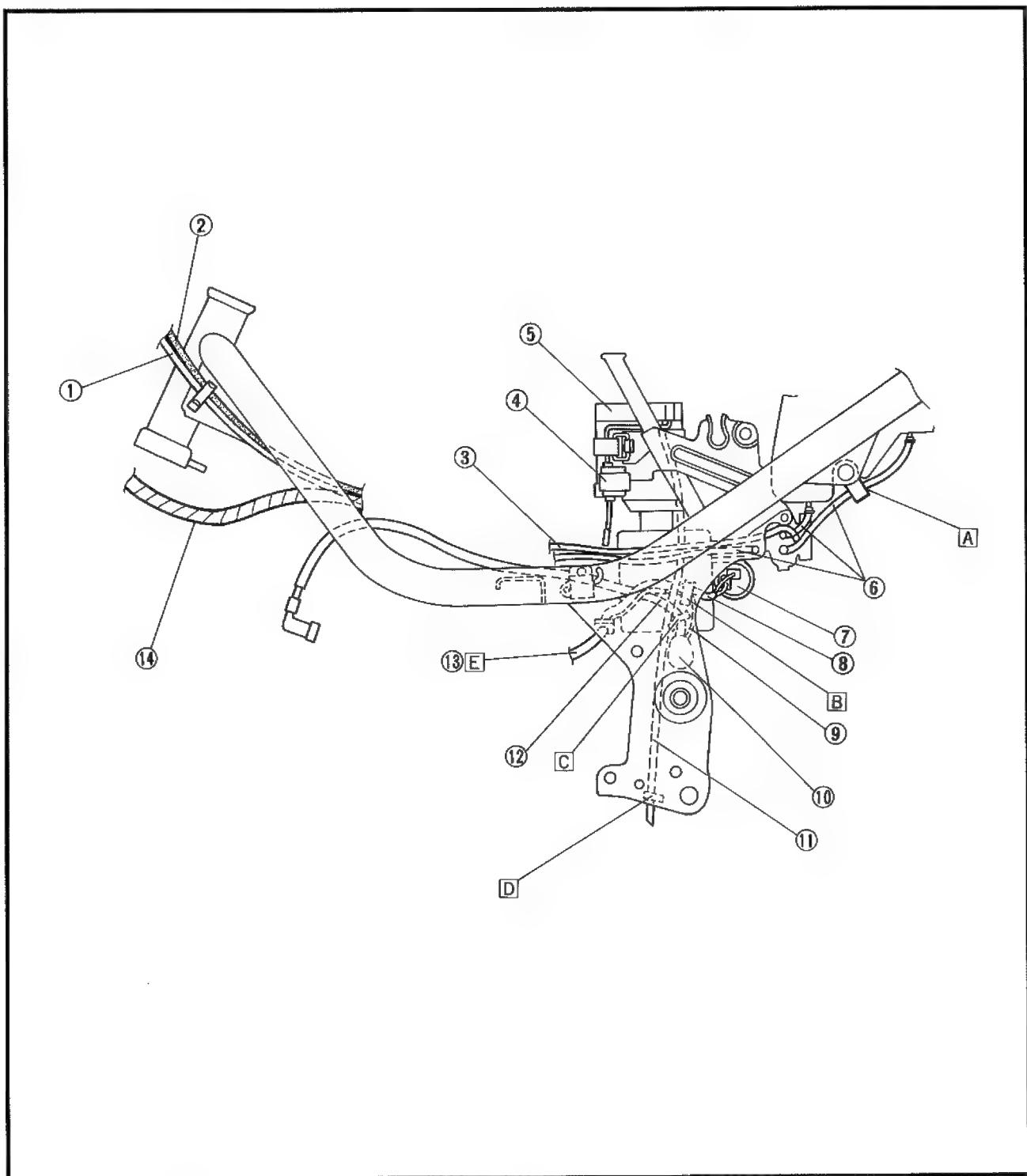
- B** After connecting the CDI magneto lead, route it to the right side.
- C** Route the fuel cock vacuum hose under the frame cross plate.
- D** Pass the inside of slit on the plain of punched on crankcase.
- E** Pass the starter cable under throttle cable #2.



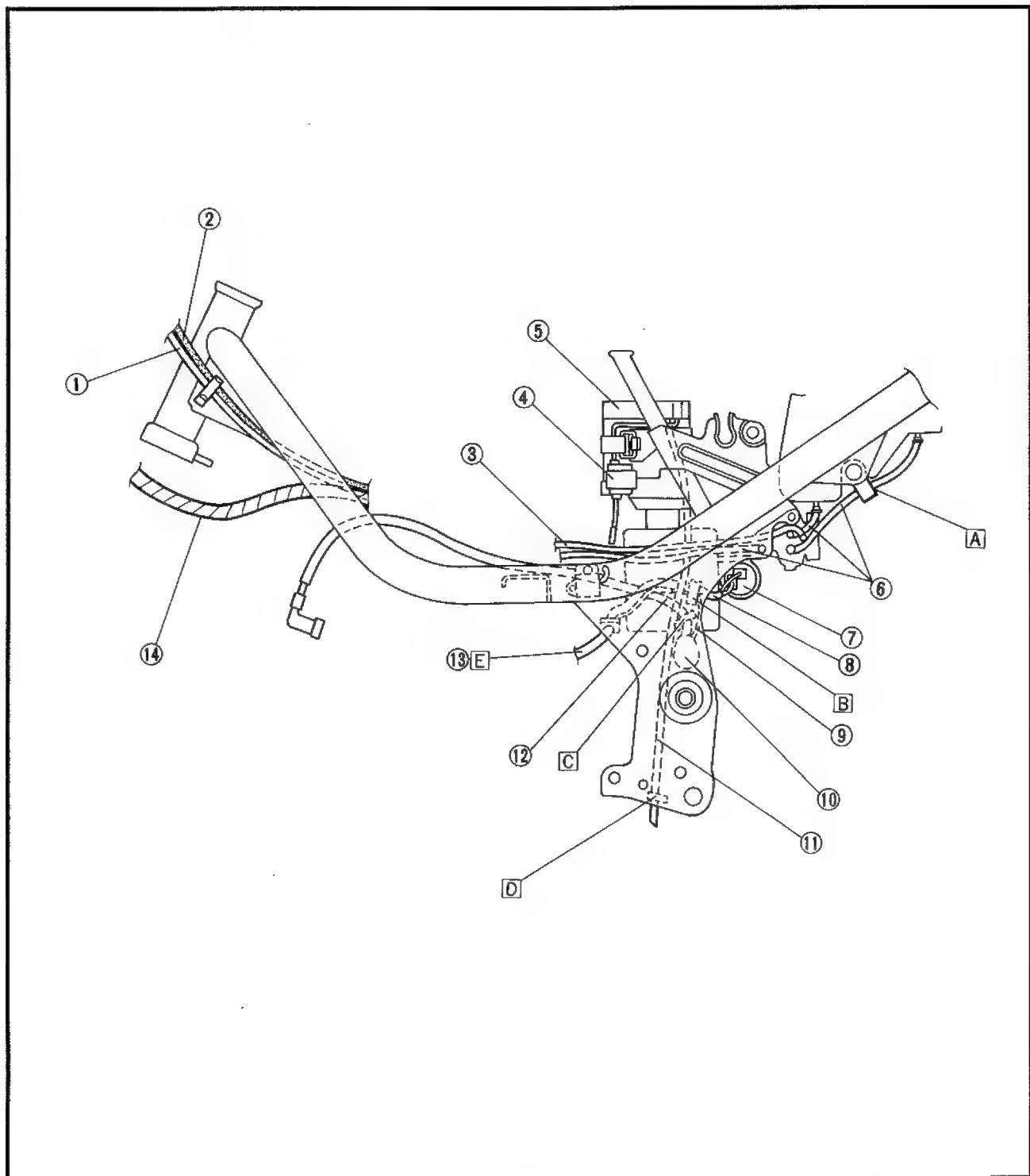
- ① Starter cable
- ② Rear brake cable
- ③ Fuel cock vacuum hose
- ④ Fuse
- ⑤ Battery
- ⑥ Fuel hose
- ⑦ Flasher relay
- ⑧ Flasher relay lead
- ⑨ Ignition coil lead
- ⑩ Ignition coil
- ⑪ Battery breather hose

- ⑫ Spark plug lead
- ⑬ CDI magneto lead
- ⑭ Wire harness

- [A] Pass the fuel hose through the inside of rear fender bracket.
- [B] Fasten the flasher relay lead and ignition coil lead on the left, inside section of frame.
- [C] Fasten the spark plug lead on the right, inside section of the frame.

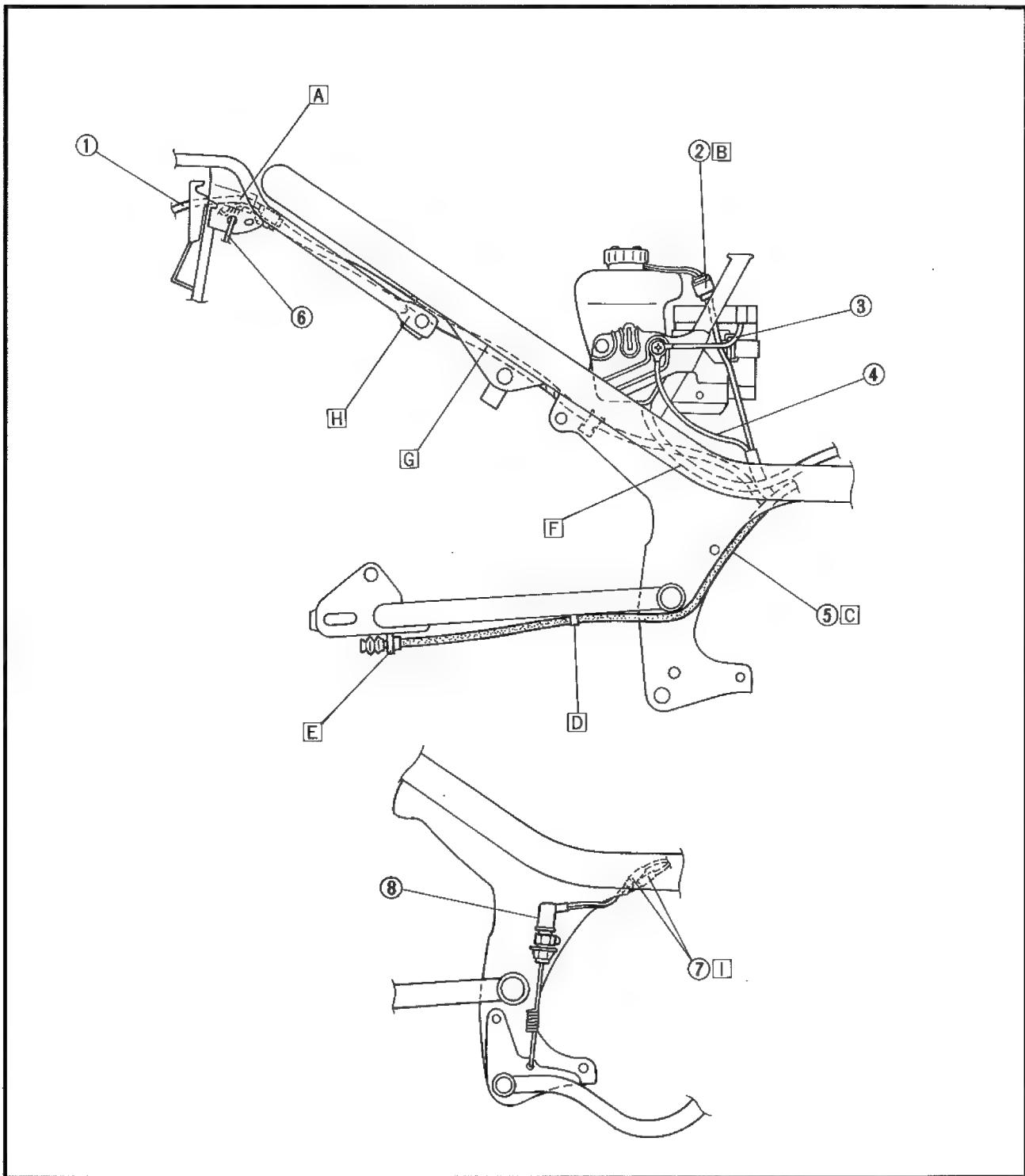


- Fasten the battery breather hose on the right, inside section of flame.
- Route the CDI magneto lead between the engine and the frame.

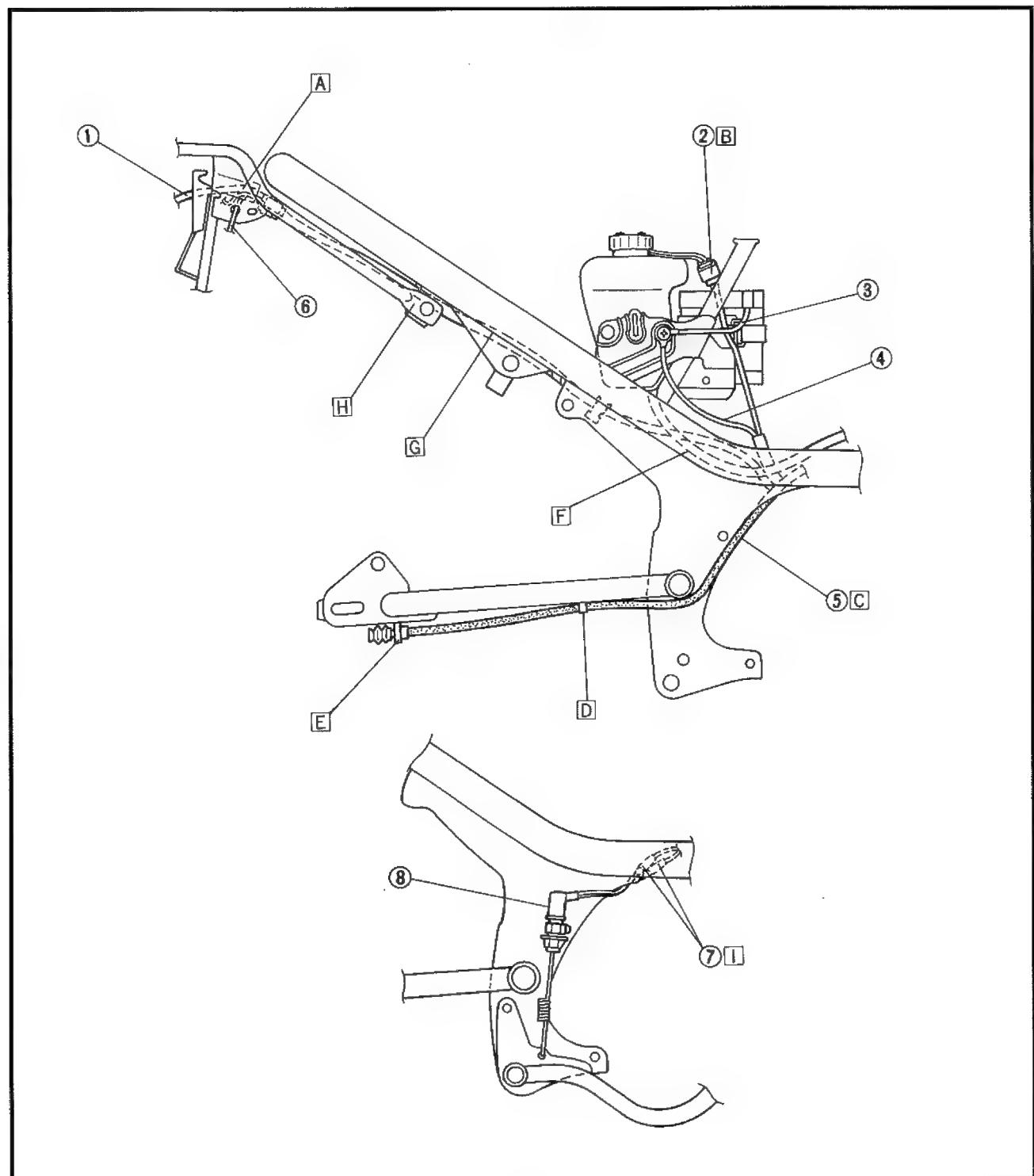


- ① Tail / brake light switch lead
- ② Oil level switch coupler.
- ③ Battery negative (-) lead
- ④ Wire harness ground lead
- ⑤ Rear brake cable
- ⑥ Rear flasher light lead
- ⑦ Rear brake light switch lead connector
- ⑧ Rear brake light switch

- A Fasten the tail / brake light switch lead and rear flasher light switch lead on the right side of the carrier.
- B After routing the oil level switch lead through the inside of the flame, connect the oil level switch coupler.
- C Route the rear brake cable between the engine and the frame.
- D Fasten the rear brake cable.
- E After installing the rear brake cable, attach the rubber boot.



- F** Make sure that the oil feed hose guide spring sheathe is flush with the base of the oil tank.
- G** Route the tail/brake light lead to inside of the rear shock absorber bracket.
- H** Fasten the tail/brake light lead.
- I** Route the rear brake light switch leads to the inside of the frame.



## SPECIAL TOOLS

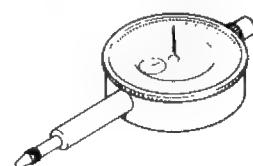
The proper special tools are necessary for complete and accurate tune-up and assembly. Using the correct special tool will help prevent damage caused by the use of improper tools or improvised techniques. The shape and part number used for the special tool differ by country, so two types are provided.

## FOR TUNE UP

Refer to the list provided to avoid errors when placing an order.

1

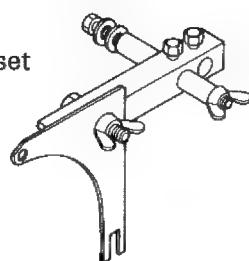
Dial gauge  
P/N. 90890-03097



This tool is necessary for adjusting the autolube pump plunger stroke.

2

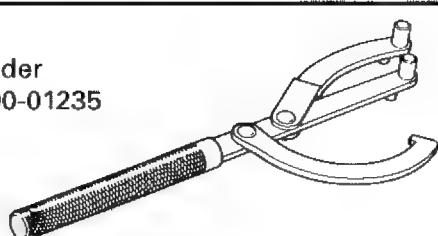
Pump adjusting stand set  
P/N. 90890-01194



This tool is used to hold the dial gauge when adjusting the autolube pump plunger stroke.

1

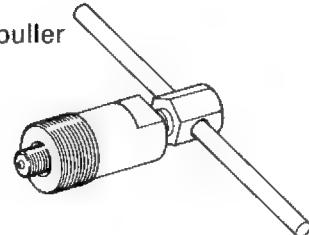
Rotor holder  
P/N. 90890-01235



This tool is used to hold the flywheel magneto and clutch assembly when removing or installing the securing nut.

2

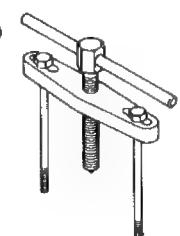
Flywheel magneto puller  
P/N. 90890-01189



This tool is used to remove the flywheel.

3

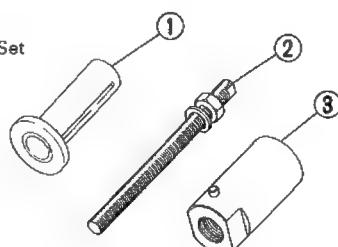
Crankcase separating tool  
P/N. 90890-01135



This tool is used when removing the crankshaft.

4

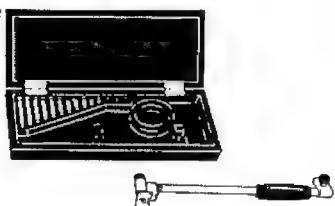
Crankshaft Installing Tool Set  
Crankshaft Installing Pot  
P/N. 90890-01274-①  
Crankshaft Installing Bolt  
P/N. 90890-01275-②  
Adapter  
P/N. 90890-01277-③



These tools are used to install the crankshaft.

5

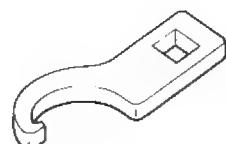
Cylinder bore gauge  
(35 ~ 60 mm)  
P/N. 90890-03016



This tool is necessary for adjusting the cylinder bore size.

1

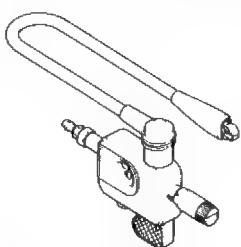
Ring nut wrench  
P/N. 90890-01403



This tool is used to loosen and tighten the steering ring nut.

1

Ignition checker  
P/N. 90890-06754



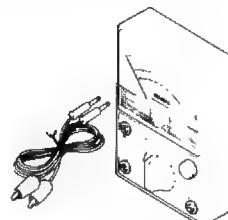
This instrument is necessary for checking the ignition system components.

## FOR CHASSIS SERVICE

## FOR ELECTRICAL COMPONENTS

2

Pocket tester  
P/N. 90890-03112



This instrument is invaluable for checking the electrical system.

## **CHAPTER 2. PERIODIC INSPECTIONS AND ADJUSTMENTS**

<b>INTRODUCTION .....</b>	<b>33</b>
<b>SPECIAL TOOLS .....</b>	<b>33</b>
<b>MAINTENANCE INTERVALS .....</b>	<b>34</b>
<b>LUBRICATION INTERVALS .....</b>	<b>34</b>
<b>ENGINE .....</b>	<b>36</b>
Carburetor.....	36
Air cleaner.....	36
Autolube pump.....	38
Engine and transmission oil.....	39
Cylinder head.....	41
<b>CHASSIS .....</b>	<b>42</b>
Fuel petcock.....	42
Front brake and wheel .....	42
Rear brake and wheel .....	43
Drive chain .....	43
Suspension, steering and swing arm .....	45
<b>ELECTRICAL.....</b>	<b>46</b>
Spark plug.....	46
Battery .....	46
Headlight beam adjustment .....	47

**2**

2

## **CHAPTER 2. PERIODIC INSPECTIONS AND ADJUSTMENTS**

### **INTRODUCTION:**

This chapter includes all information necessary to perform recommended inspections and adjustments. These preventive maintenance procedures, if followed, will insure more reliable vehicle operation and a longer service life. The need for costly overhaul work will be greatly reduced. This information not only applies to vehicles already in service, but also to new vehicles that are being prepared for sale. Any service technician performing preparation work should be familiar with this entire chapter.

### **SPECIAL TOOLS**

- 1. Dial Gauge
- 2. Dial Gauge Stand
- 3. Torque Wrench
- 4. Steering Nut Wrench
- 5. Tire Pressure Gauge
- 6. Fluid Measuring Cup

## MAINTENANCE INTERVALS

Item	Remarks	Initial (km)			Thereafter every (km)	
		500	1,000	1,500	3,000	1,500
Brake system (complete)	Check/Adjust as required - repair as required		○	○		○
Battery	Top-off/Check specification gravity monthly, or →	○		○		○
Spark plug	Inspect/Clean or replace as required	○	○	○		○
Wheels and tires	Pressure/Runout	○		○		○
Fittings and fasteners	Tighten before each trip and/or →	○		○		○
Drive chain	Tension/Alignment (No. 1)	○	○	○		○
Engine oil level check	Unit level	○	○	○		○
Air filter	Wet type - clean/Replace as required (No. 2)			○		○
Fuel petcock(s)	Clean/Flush tank as required			○	○	○
Ignition timing	Adjust/Clean or replace parts as required		○	○	○	○
Carburetor adjustment	Check operation		○	○	○	○
Carburetor overhaul	Clean/Repair as required/Refit/Adjust					6,000
Decarbonize engine	Includes exhaust system			○		○

### Service notes:

No.1. DRIVE CHAIN: In addition to tension and alignment, chain must be lubricated every 500 km. If unit is subjected to extremely hard usage and wet weather riding, chain must be checked constantly. See "Lubrication Intervals" for additional details.

No.2. AIR FILTER: Remove and clean filter at least once per month or every 1,500 km.

## LUBRICATION INTERVALS

Item	Remarks	Type*	Initial (km)			Thereafter every (km)		
			500	1,000	1,500	3,000	1,500	3,000
Transmission oil change	Warm engine before draining	No. 1	○			○	CHK	○
Drive chain	Lube/Adjust as required	No. 2					See service notes	
Drive chain	Remove/Clean/Lube/Adjust	No. 2			○		○	
Control and meter cables	All-apply thoroughly	No. 3			○	○		○
Throttle grip and housing	Light application	No. 4				○		○
Speedometer gear housing	Light application	No. 4				○		○
Rear arm pivot shaft	Zink apply until shows	No. 5			○		○	
Brake pedal shaft	Light application	No. 4			○			○
Stand shaft pivot(s)	Light application	No. 4			○			○
Front forks	Drain completely	No. 8		CHK			CHK	○
Steering ball races	Inspect thoroughly/Pack	No. 6				○		CHK
Point cam lubrication wick	Very light application	No. 7			○			○
Wheel bearings	Do not over-pack	No. 6				○	CHK	○

Be sure to check the above points before long-distance touring.

\* Recommended lubricant. (See chart on next page)

### **Recommended lubricant types**

1. Use Yamalube 4-cycle oil, or SAE 10W/30 type "SE" motor oil.
2. Use Yamaha chain lube or SAE 10W/30 type "SE" motor oil. (If desired, specialty lubricants of quality manufacture may be used.)
3. Use Yamaha cable lube or SAE 10W/30 type "SE" motor oil. (If desired, or at ambient temperature below 0°C, a graphite base "dry" lubricant of quality manufacture may be used.)
4. Light duty: Lithium soap base grease.  
Heavy duty: Standard chassis lube grease. (Do not use chassis lube grease on throttle/throttle housing.)
5. Use a soft chassis lube grease.
6. Medium-weight wheel bearing grease of quality manufacture - preferably waterproof.
7. Light-weight machine oil.
8. Use Yamaha fork oil.

**NOTE:**

Drive chain must be lubricated every 500 km. If unit is subjected to extremely hard use, chain must be inspected frequently and serviced as required.

## ENGINE

### Carburetor

1. Make certain that throttle cable free play is proper.

2. Pilot air screw

Turn the air adjusting screw (1) until it is lightly seated, then back it out 1 (LB50 II AC) or 1-3/4 (LB80 II AC) turns. This adjustment can be made with the engine stopped.

3. Start the engine and let it warm up.

4. Idle speed screw

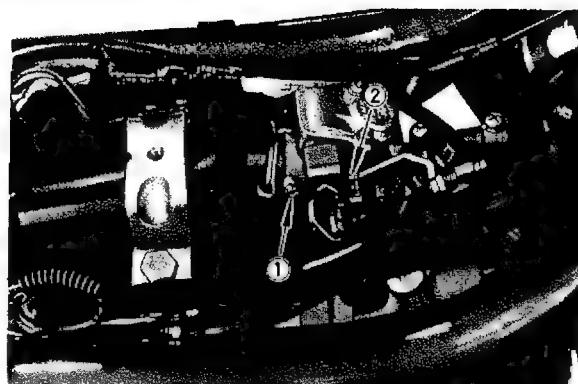
Turn throttle stop screw (2) in or out to achieve smooth engine operation at idle speed specified in Carburetor Setting Table.

**NOTE:**

The pilot air and idle speed screws are separate adjustments but they must be adjusted at the same time to achieve optimum operating condition at engine idle speeds.

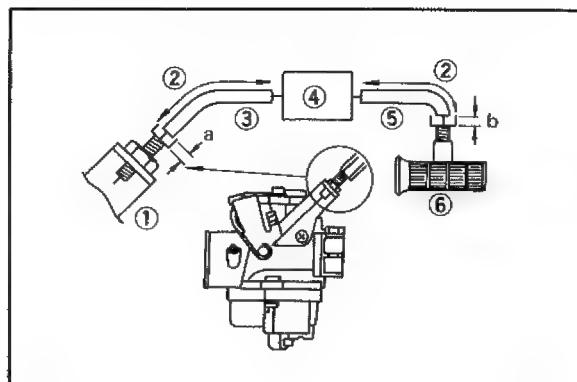
5. Throttle cable

After engine idle speed is set, make cable free play adjustment at cable adjustor near throttle grip. Loosen locknut and turn adjustor until there is 0.5 ~ 1.0 mm free play between throttle cable housing and cable adjustor. Retighten locknut. Loosen cable adjustor locknut (at top of carburetor) and turn cable adjustor until there is 1.0 mm free play in cable "2". Retighten locknut.



1. Pilot air screw

2. Idle speed screw



a. 1.0 mm

b. 0.5 ~ 1.0 mm

1. Carburetor

2. Slide

3. Cable 2

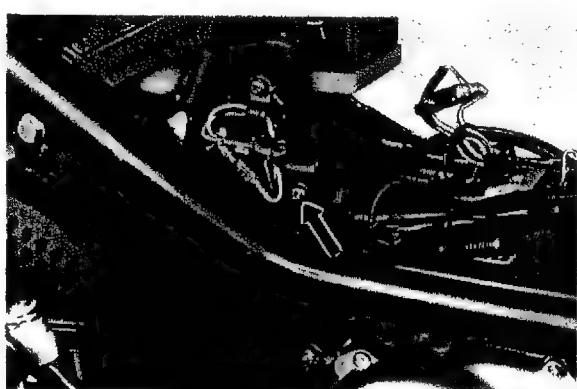
4. Junction block

5. Cable 1

6. Throttle grip

### Air cleaner

1. Remove the air cleaner case cap and element assembly.



2. Slip the element off the wire mesh guide.
3. Wash the element gently, but thoroughly, in solvent.
4. Squeeze excess solvent out of element and dry.
5. Pour a small quantity of 30W. motor oil onto cleaner element and work thoroughly into the porous foam material. Element must be damp with oil but not dripping.
6. Re-insert the wire mesh cleaner element guide into the element.
7. Coat the upper and lower edges of the cleaner element with lube grease. (This will provide an air-tight seal between the cleaner case cover and cleaner seat.)
8. Re-install the element assembly, case cover and seat.

**NOTE:**

Each time cleaner element maintenance is performed, check the air inlet to the cleaner case for obstructions. Check the air cleaner joint rubber to the carburetor and manifold fittings for an air-tight seal. Tighten all fittings thoroughly to avoid the possibility of unfiltered air entering the engine.

**CAUTION:**

Never operate the engine with the air cleaner element removed.  
This will allow unfiltered air to enter, causing rapid wear and possible engine damage. Additionally, operation without the cleaner element will affect carburetor jetting with subsequent poor performance and possible engine overheating.



## Autolube pump

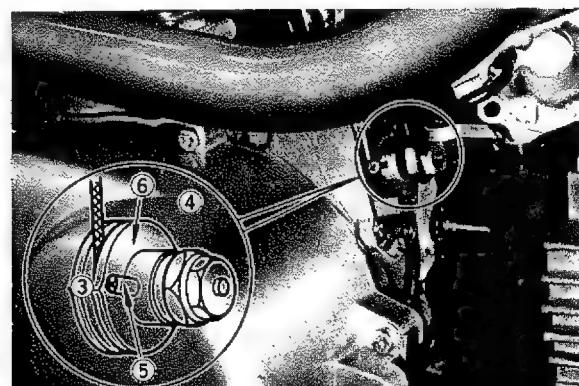
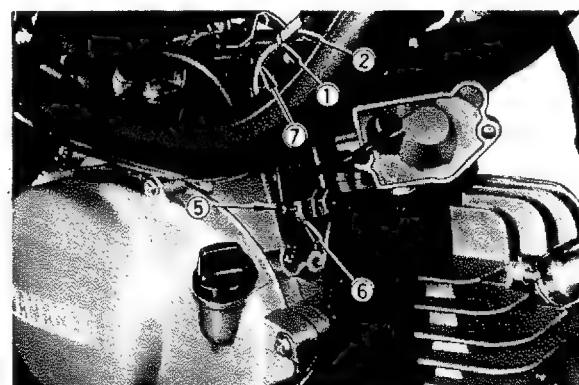
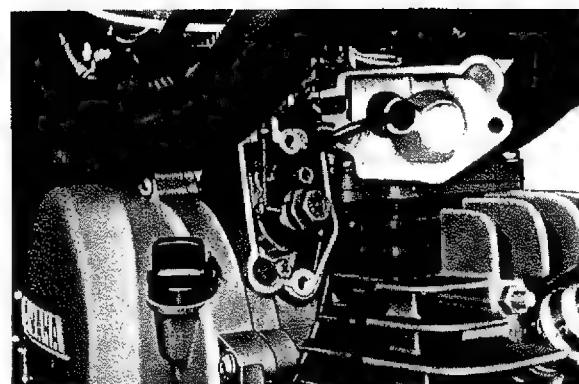
### 1. Air bleeding

To bleed the oil pump, first remove the bleed screw. Start engine and run at idling speed. Then pull the oil pump wire as much as possible, and continue to run the engine until all air bubbles disappear from the oil flowing out from the bleeder hole.

Reinstall bleed screw.

### 2. Oil pump wire adjustment

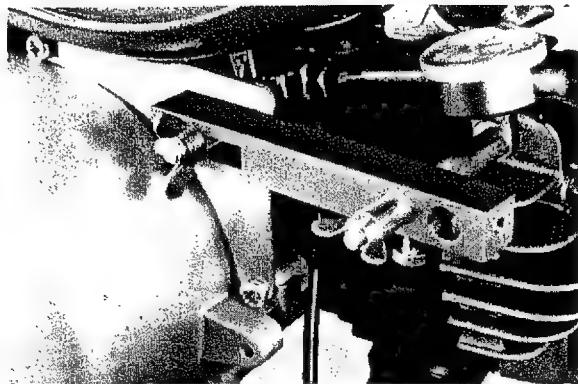
- a. Remove the slack in throttle wire 2 by turning the adjusting screw attached to the carburetor.
- b. Loosen the locknut.
- c. Turn the adjusting screw so that the mark on the adjusting pulley is aligned with the Phillips head screw attached to the adjusting plate.
- d. Screw in the locknut until tight.



1. Locknut	5. Phillips head screw
2. Wire adjusting screw	6. Adjusting pulley
3. Mark	7. Oil pump wire
4. Align on same line	

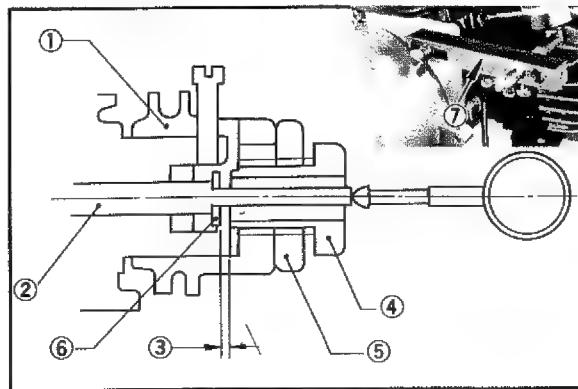
3. Minimum plunger stroke adjustment  
Set the dial gauge as shown in the figure, and check to see if the plunger stroke is correct while keeping the engine idling.

- a. To adjust the plunger stroke, first loosen the locknut.
- b. Turn the adjusting bolt in or out for proper adjustment.  
Turning the adjusting bolt clockwise decreases the plunger stroke; while turning counterclockwise increases the plunger stroke.
- c. When the correct stroke is attained, tighten the locknut.



**Specified stroke:**

LB50 II AC	LB80 II AC
Minimum stroke	
0.20 ~ 0.25 mm	
Maximum stroke	
0.55 ~ 0.65 mm	0.80 ~ 0.95 mm
Pulley color code	
Gray	Brown
Pulley adjust mark	



1. Adjust pulley	5. Locknut
2. Plunger	6. Adjusting plate
3. Min. stroke	7. Dial gauge stand (for oil pump)
4. Adjusting bolt	

### Engine and transmission oil

1. Engine
  - a. Autolube oil

We recommend that first choice be Yamaha 2-cycle oil. If for any reason you should use another type, the oil should meet or exceed BIA certification "TC-W". Check container top or label for service specification. If above oils are not available, use a 30 or 40 wt 2-stroke oil for air-cooled engines.

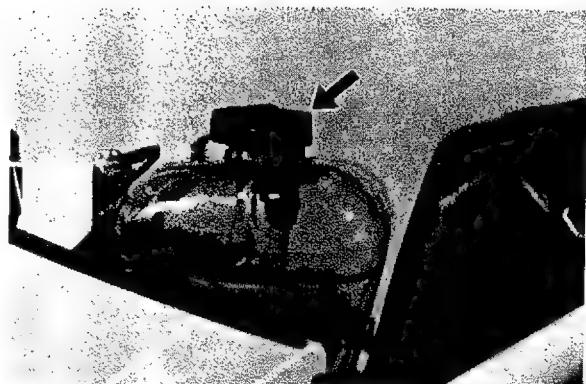
**CAUTION:**

**Under extremely cold conditions (0°C or below) 30 and 40 wt oils become very thick and will not flow as readily to the Autolube pump. This may cause oil pump starvation. Yamaha 2-cycle oil will flow normally to the pump at temperatures below 18°C.**

b. Autolube tank

Always check Autolube tank oil level before operating machine.

- 1) Raise seat.
- 2) Remove filler cap and top off tank.



2. Transmission

a. To check level, start the engine and let it run for several minutes to warm and distribute oil. Unscrew the level gauge and wipe clean. Set it on the case threads (do not screw in). Remove the level gauge and check level.

**NOTE:**

Be sure the machine is level and on both wheels.

b. The stick has Minimum and Maximum marks. The oil level should be between the two. Top off as required.

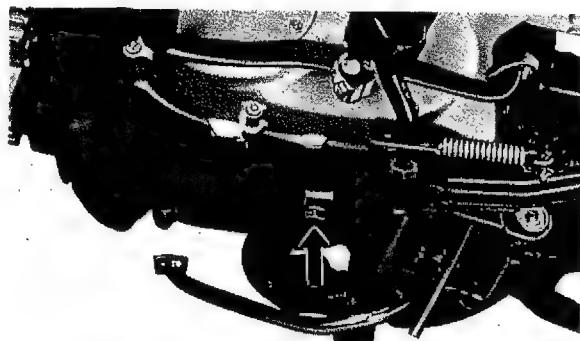
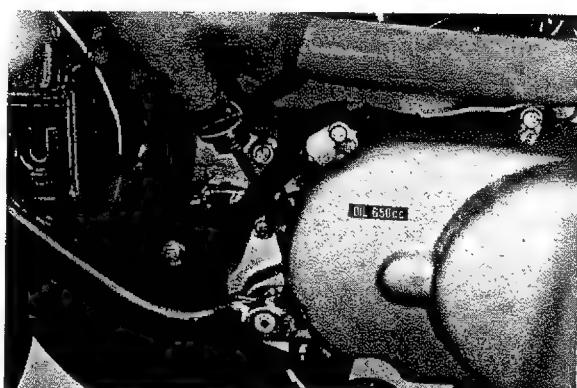
Recommended oil:  
SAE 10W/30 type "SE" motor oil

c. To change transmission oil, remove the drain plug which is located on the bottom of the crankcase.

With the engine warm, remove the plug and drain oil. Re-install plug and add fresh oil.

Transmission drain plug torque:  
20 Nm (2.0 m · kg)

Transmission oil quantity:  
650 cc



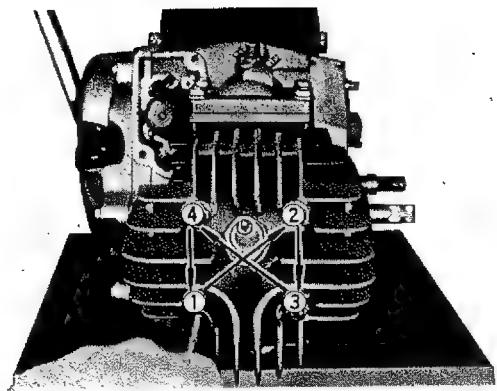
**CAUTION:**

Under no circumstances should any additives be included with the transmission oil. This oil also lubricates and cools the clutch. Many additives will cause severe clutch slippage.

**Cylinder head**

Check torque of cylinder head holding nuts.  
Tighten in a crisscross pattern.

Cylinder head nut torque:  
10 Nm (1.0 m · kg)



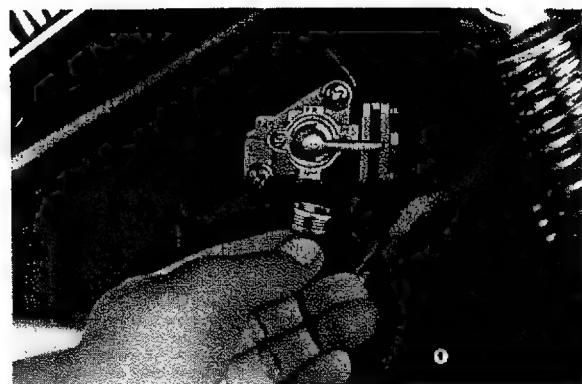
## CHASSIS

### Fuel petcock

1. Clean fuel filter
  - a. Turn fuel petcock to "ON" or "RES" position and disconnect fuel pipe.
  - b. Remove filter cap and clean filter.

**NOTE:**

If filter is damaged, replace.



### Front brake and wheel

#### 1. Front brake adjustment

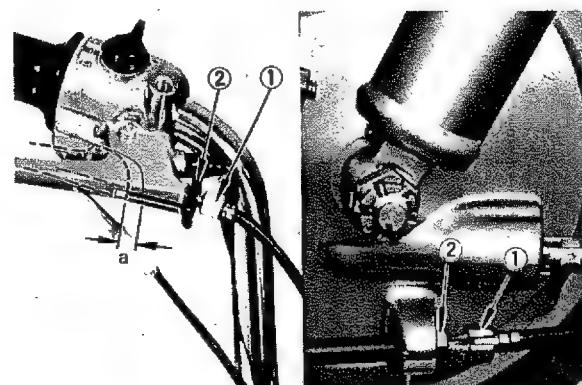
Front brake cable free play can be adjusted to suit rider's preference, but a minimum free play of 5 ~ 8 mm should be maintained. Free play can be adjusted at handlebar lever or brake shoe plate.

- a. Loosen the adjuster locknut (2).
- b. Turn the adjuster (1) in or out until adjustment is suitable.
- c. Tighten the adjuster locknut (2).

#### 2. Front axle

- a. Check axle nut.

Front axle nut torque:  
39 Nm (3.9 m · kg)

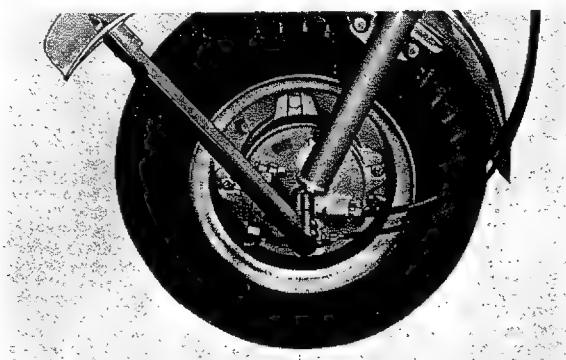


a. 5 ~ 8 mm

1. Adjuster 2. Locknut

#### 3. Front tire pressure (cold tire)

Model	LB50 II AC	LB80 II AC
Basic weight: With oil and full fuel tank	80 kg	76 kg
Maximum load*:	140 kg	144 kg
Up to 70 kg load*	100 kPa (1.00 kg/cm <sup>2</sup> , 1.00 bar)	
70 kg ~ maximum load*	100 kPa (1.00 kg/cm <sup>2</sup> , 1.00 bar)	



\* Load is the total weight of the cargo, rider, passenger and accessories.

## Rear brake and wheel

### 1. Rear brake adjustment

The rear brake can be adjusted in two ways: (1) using the adjust screws at the rear brake lever or (2) at the rear brake shoe plate. Loosen the locknut and turn the adjust screw to adjust the brake lever. The clearance between the brake lever and the brake lever holder should be 5 ~ 8 mm as shown in the illustration. After adjusting, be sure the locknut is tightened firmly.

#### **NOTE:**

Rear brake adjustment must be checked whenever chain is adjusted or rear wheel is removed and then re-installed.

### 2. Rear axle

Check axle nut.

Rear axle nut torque: 60 Nm (6.0 m · kg)
---

### 3. Rear tire pressure (cold tire)

Model	LB50 II AC	LB80 II AC
Basic weight: With oil and full fuel tank	80 kg	76 kg
Maximum load*:	140 kg	144 kg
Up to 70 kg load*	125 kPa (1.25 kg/cm <sup>2</sup> , 1.25 bar)	
70 kg ~ maximum load*	200 kPa (2.0 kg/cm <sup>2</sup> , 2.0 bar)	150 kPa (1.5 kg/cm <sup>2</sup> , 1.5 bar)

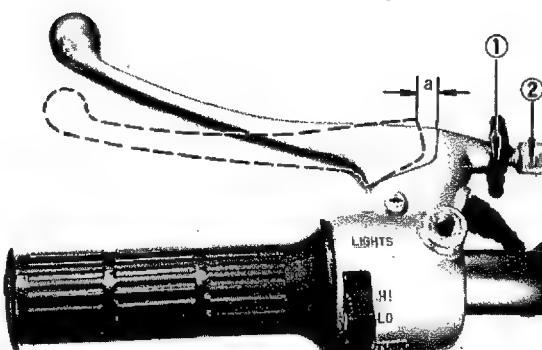
\* Load is the total weight of the cargo, rider, passenger and accessories.

## Drive chain

### 1. Drive chain adjustment

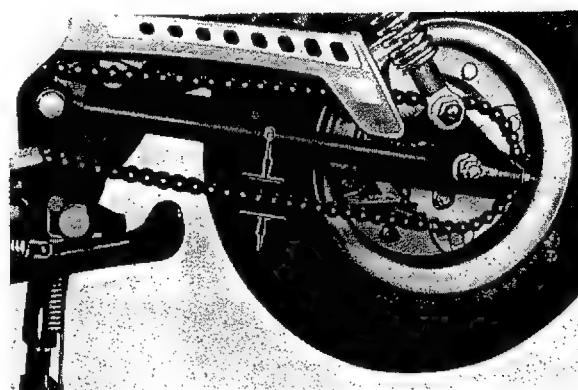
To adjust drive chain, proceed as follows:

- Remove rear axle cotter pin.
- Loosen rear axle securing nut (3).
- With rider in position on machine with both wheels on ground, set axle adjusters until there is 20 ~ 30 mm free play in the drive chain at the bottom of the chain at a point midway between the drive and driven axles.



a. 5 ~ 8 mm

- Locknut
- Adjuster



a. 20 ~ 30 mm

- d. Turn adjusters (chain puller nuts) both left and right, until axle is situated in same positions as shown by position marks (1) on swing arm axle tabs.
- e. Tighten the rear axle securing nut (3).

Axle nut torque:  
60 Nm (6.0 m · kg)

- f. Install a new cotter pin and bend the end over.

## 2. Drive chain maintenance

The chain should be lubricated per the recommendations given in the Maintenance and Lubrication Interval charts. More often if possible. Preferably after every use.

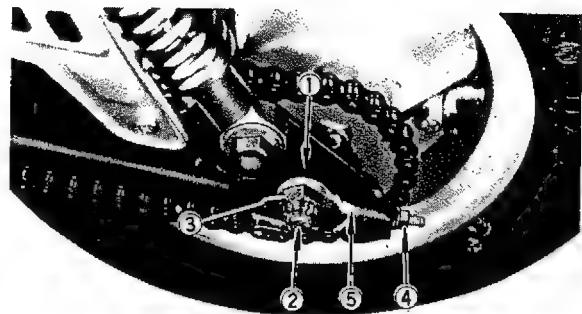
- a. Wipe off dirt with shop rag. If accumulation is severe, use wire brush, then rag.
- b. Apply lubricant between roller and side plates on both inside and outside of chain. Don't skip a portion as this will cause uneven wear.

Apply thoroughly. Wipe off excess.

### **NOTE:**

Choice of lubricant is determined by use and terrain. SAE 20 wt or 30 wt motor oil may be used, but Yamaha chain and cable lube offer more penetration and corrosion resistance for roller protection. In certain areas, semi-drying lubricants are preferable. These will resist picking up sand particles, dust,etc.

- c. Periodically, remove the chain. Wipe and/or brush excess dirt off. Blow off with high pressure air.
- d. Soak chain in solvent, brushing off remaining dirt. Dry with high pressure air. Lubricate thoroughly while off machine. Work each roller thoroughly to make sure lubricant penetrates. Wipe off excess. Re-install.



1. Position marks	4. Adjust nut
2. Axle shaft	5. Chain puller
3. Axle nut	

## Suspension, steering and swing arm

### 1. Steering head adjustment

The steering assembly should be checked periodically for any looseness. Do this as follows:

- a. Block machine up so that front wheel is off the ground.
- b. Grasp bottom of forks and gently rock fork assembly backward and forward, checking for any looseness in the steering assembly bearings.
- c. If steering head needs adjustment, loosen steering fitting bolt.
- d. Using steering nut wrench, adjust steering head fitting nut until steering head is tight without binding when forks are turned.

#### NOTE:

Excessive tightening of this nut will cause rapid wear of ball bearings and races.

Re-check for looseness and freedom of movement.

- e. Tighten steering fitting bolt.

#### NOTE:

After completing steering adjustment, make certain forks pivot from stop to stop without binding. If binding is noticed, repeat adjustment.

### 2. Suspension

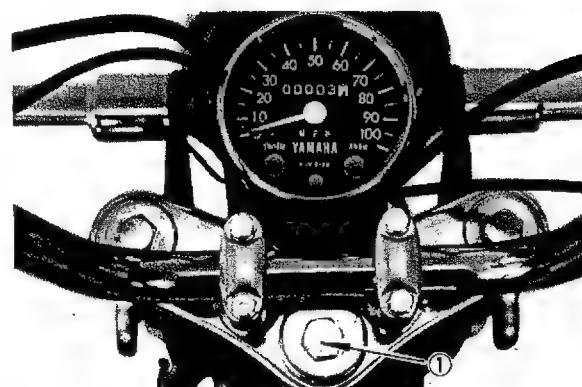
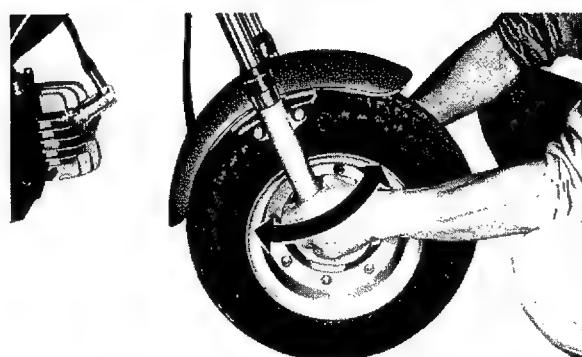
- a. Check all suspension for proper operation.
- b. Check all suspension for proper tightness.
- c. Check rear shocks (R and L) for identical adjustment.

### 3. Swing arm

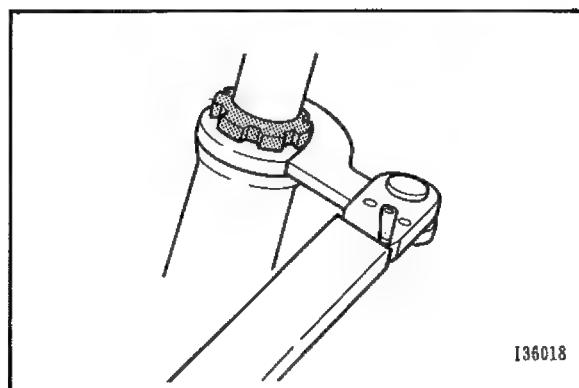
- a. Check for freedom of up and down movement.
- b. Check side to side free play.

**Swing arm free play:**  
0.5 mm at end of swing arm

- c. Check all securing bolts for proper tightness.
- d. Grease swing arm periodically.



1. Steering fitting bolt



I36018

## ELECTRICAL

### Spark plug

The spark plug indicates how the engine is operating. If the engine is operating correctly, and the machine is being ridden correctly, then the tip of the white insulator around the positive electrode of the spark plug will be a medium tan color. If the insulator is very dark brown or black color, then a plug with a hotter heat range might be required. This situation is quite common during the engine break-in period.

If the insulator tip shows a very light tan or white color or actually pure white and glazed or if electrodes show signs of melting, then a spark plug with a colder heat range is required.

Remember, the insulator area surrounding the positive electrode of the spark plug must be a medium tan color. If it is not, check carburetion, timing and ignition adjustments.

The spark plug must be removed and checked. Check electrode wear, insulator color, and electrode gap.

**Spark plug gap:**  
0.5 ~ 0.6 mm

Engine heat and combustion chamber deposits will cause any spark plug to slowly break down and erode. If the electrodes finally become too worn, or if for any reason you believe the spark plug is not functioning correctly, replace it.

When installing the plug, always clean the gasket surface, use a new gasket, wipe off any grime that might be present on the surface of the spark plug, torque the spark plug properly.

Standard Spark Plug	Tightening Torque
NGK B-6HS	2.5 ~ 3.0 m · kg

### Battery

A poorly maintained battery will deteriorate quickly.

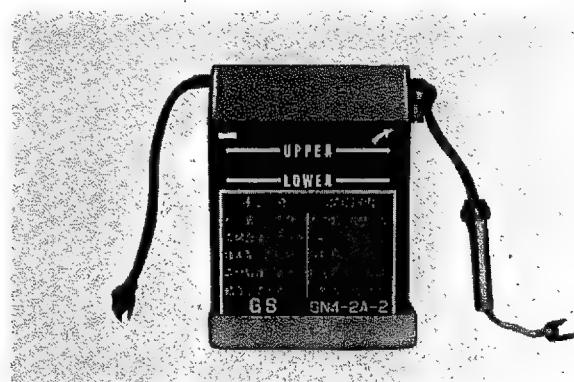
The battery fluid should be checked at least once a month.

1. The level should be between the upper and lower level marks. Use only distilled water if refilling is necessary.

#### NOTE:

Normal tap water contains minerals which are harmful to a battery; therefore, refill only with distilled water.

2. Always make sure the connections are correct when putting the battery back in the motorcycle. The red lead is for the + terminal and the black lead is for the - terminal. Make sure the breather pipe is properly connected and is not damaged or obstructed.



**NOTE:**

When filled with diluted sulfuric acid (electrolyte), this battery can be put into use immediately. That is, it is a dry-charged battery. It is advisable, however, that the battery be charged as much as possible before using for the first time for maximum performance. This initial charge will prolong the life of the battery.

Charging current: 0.4A

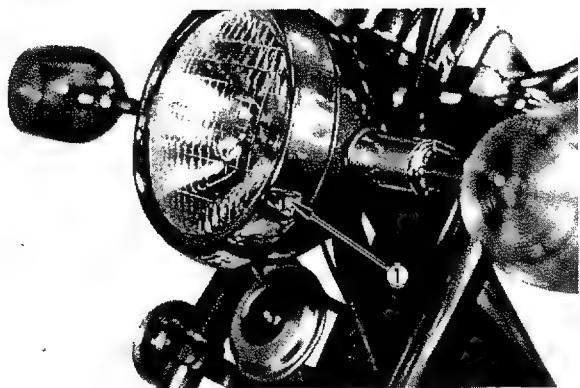
Charging hours: 10 hrs

---

**Headlight beam adjustment**

When necessary, adjust the headlight beam as follows:

1. Adjust horizontally by tightening or loosening the adjusting screw, as in the illustration.  
To adjust to the right: tighten the screw  
To adjust to the left: loosen the screw
2. Adjust vertically by moving the headlight body.



1. Adjusting screw

# CHAPTER 3. ENGINE OVERHAUL

<b>REMOVAL .....</b>	50
Preparation for removal.....	50
Removal .....	53
<b>DISASSEMBLY .....</b>	53
Reed valve assembly .....	53
Cylinder head and cylinder.....	54
Piston pin and piston .....	54
Crankcase cover, right .....	54
Clutch assembly and primary gear.....	55
Kick axle assembly .....	56
Shifter rod assembly.....	56
Crankcase.....	57
Transmission .....	57
Crankshaft assembly.....	58
<b>INSPECTION AND REPAIRING .....</b>	58
Cylinder head.....	58
Cylinder .....	59
Piston pin and bearing .....	59
Piston.....	60
Piston rings .....	62
Autolube pump.....	63
Clutch .....	67
Kick starter .....	69
Sub-Transmission .....	70
Crankshaft.....	71
Bearings and oil seals .....	72
Crankcase.....	73
<b>ENGINE ASSEMBLING AND ADJUSTMENT .....</b>	74
Crankshaft installation .....	74
Sub-Transmission installation.....	75
Crankcase.....	79
Shifter.....	80
Kick starter assembly .....	80
Pump drive gear and primary drive gear.....	80
Primary gears and clutches .....	81
Crankcase cover, right .....	81

3

Piston.....	83
Cylinder .....	83
Cylinder head.....	83
<b>INSTALLING ENGINE.....</b>	<b>84</b>

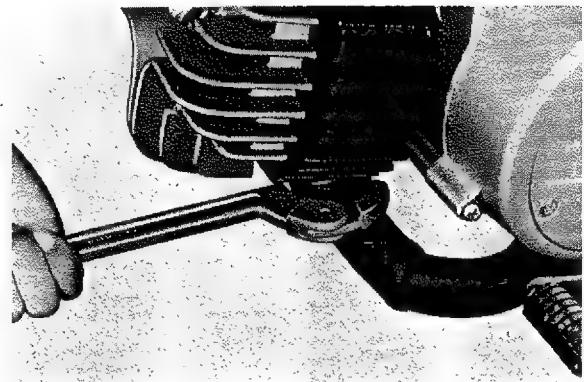
# 3

## CHAPTER 3. ENGINE OVERHAUL

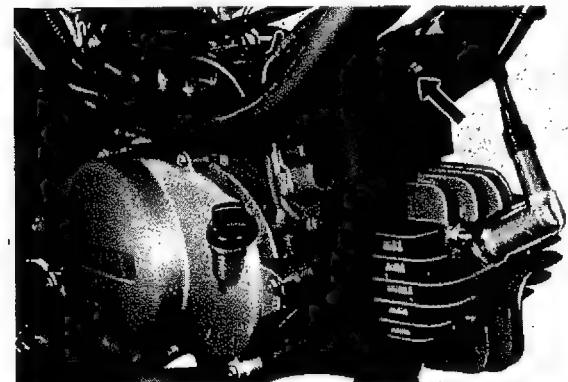
### REMOVAL

#### Preparation for removal

1. All dirt, mud, dust, and foreign material should be thoroughly removed from the exterior of the engine before removal and disassembly. This will prevent any harmful foreign material from entering the interior of the engine assembly.
2. Before engine removal and disassembly, be sure you have proper tools and cleaning equipment so you can perform a clean and efficient job.
3. During disassembly of the engine, clean and place all parts in trays in order of disassembly. This will ease and speed assembly time and insure correct re-installation of all engine parts.
4. Start the engine and warm it for a few minutes; turn off and drain transmission oil.
5. Remove exhaust pipe ring nut.
6. Remove spark plug cap.



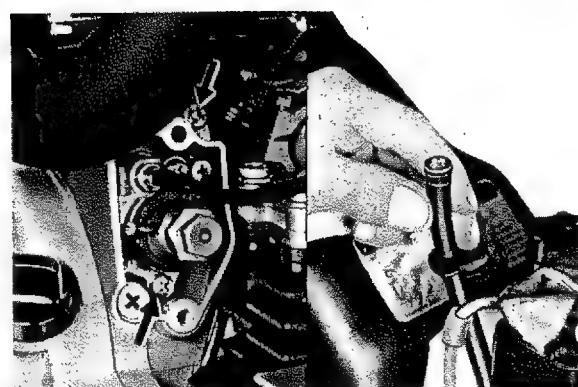
7. Remove panel cover and front cover.



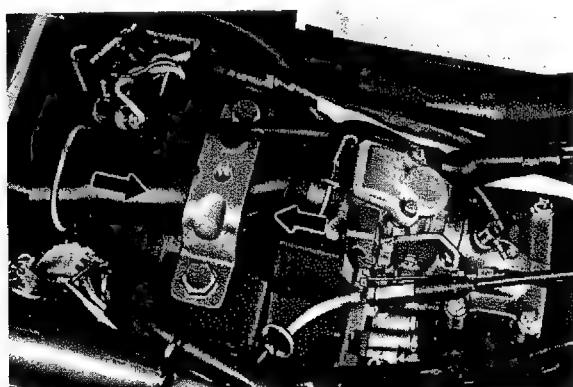
8. Remove pump cover (1) and pump cable.



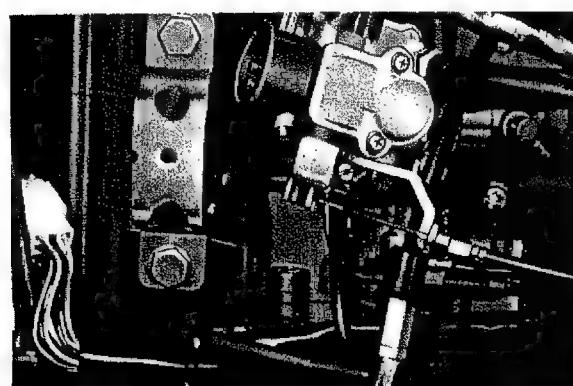
9. Remove pump cover (2) and oil pipe. Screw the oval counter-sunk screw securing pump cover into oil pipe as illustrated, and tentatively place oil pipe over oil tank.



10. Remove air cleaner joint.



11. Remove the carburetor.

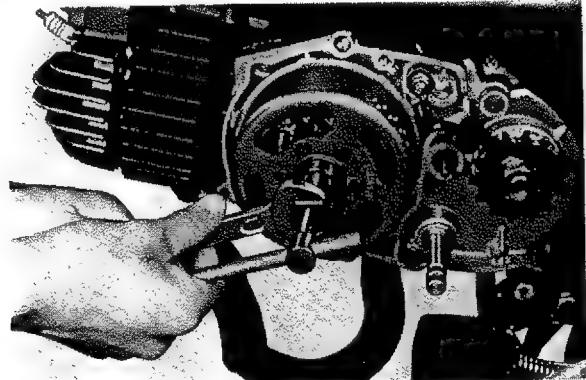
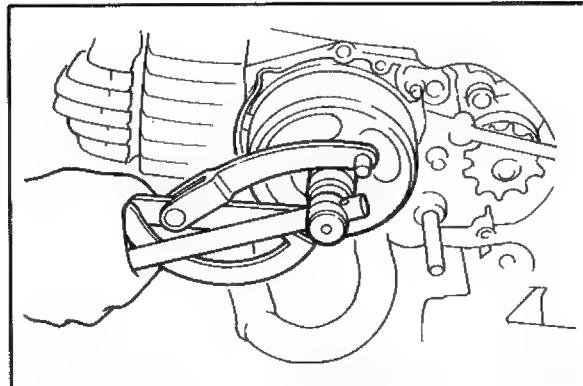


12. Remove fuel cock vacuum pipe from insulator.
13. Remove case cover (L).
14. Remove chain.
15. Remove flywheel securing nut using flywheel holder. Note the position and direction of the washers.  
Install flywheel puller on flywheel and tighten it.

**NOTE:**

The puller body has a lefthand thread.

While holding puller body, tighten push bolt. This will pull flywheel off the tapered end of the crankshaft. Disconnect the magneto lead wires from the main harness.

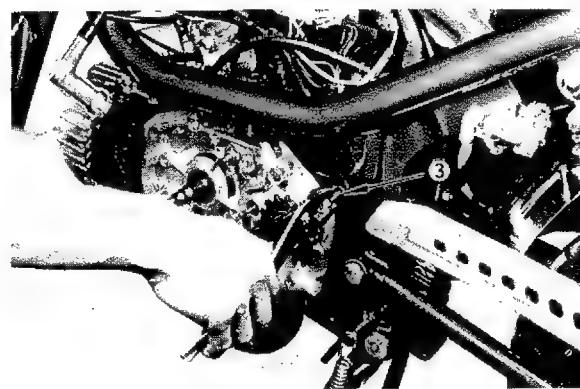
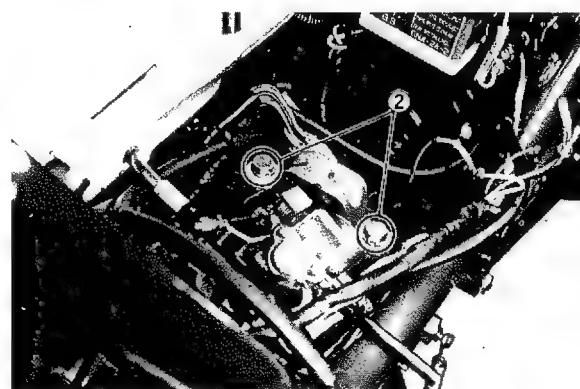
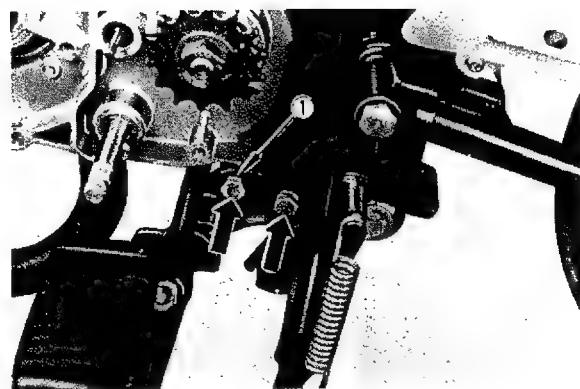


## Removal

1. Remove two footrest bolts (1) and two bolts (2) in the upper area of the engine, and remove bolt (3).

**NOTE:** \_\_\_\_\_

1. The two bolts (2) should be loosened so that they can be screwed out by hand afterward. Holding the engine with your left hand, remove bolts (2), then remove bolt (3).
2. The exhaust pipe should be moved down so that it does not obstruct the removal of the engine.

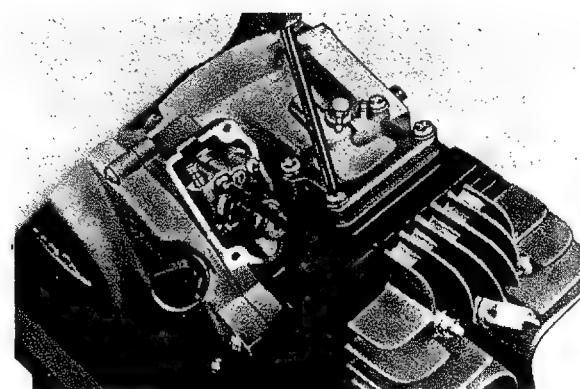


## DISASSEMBLY

Remove engine bracket and kick crank assembly.

### Reed valve assembly

Remove reed valve assembly holding bolts (4), carburetor joint and reed valve assembly.

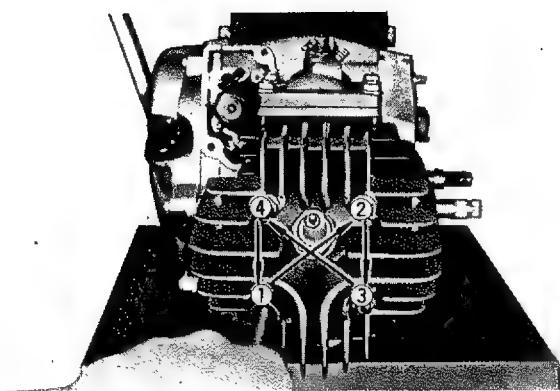


## Cylinder head and cylinder

Remove cylinder head holding nuts (4) and cylinder head and cylinder.

### NOTE:

Loosen spark plug before loosening cylinder head.



## Piston pin and piston

1. Remove piston pin clip (1) from piston.

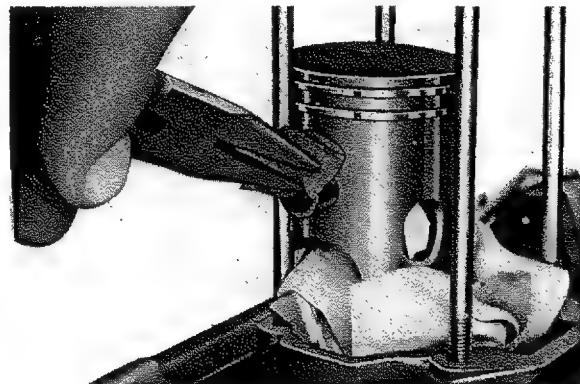
### NOTE:

Before removing the piston pin clip, cover the crankcase with a clean rag so you will not accidentally drop the clip into the crankcase.

2. Push piston pin from opposite side, then pull out. Protect pin with rag as shown.

### NOTE:

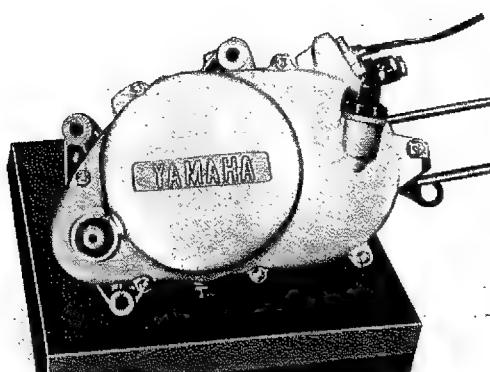
Before removing piston pin, deburr clip groove and pin hole area.



## Crankcase cover, right

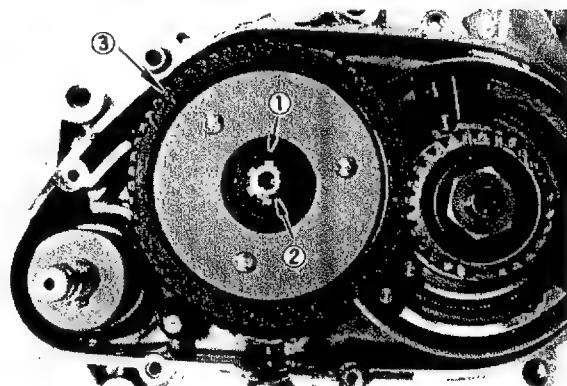
Remove crankcase cover (right) holding bolts and the cover.

If the crankcase cover is hard to remove, tap it with a soft-faced hammer.



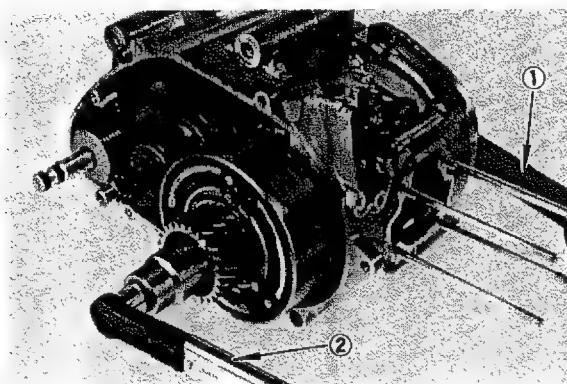
## Clutch assembly and primary gear

1. Remove circlip and gear holders, then remove the primary driven gear.



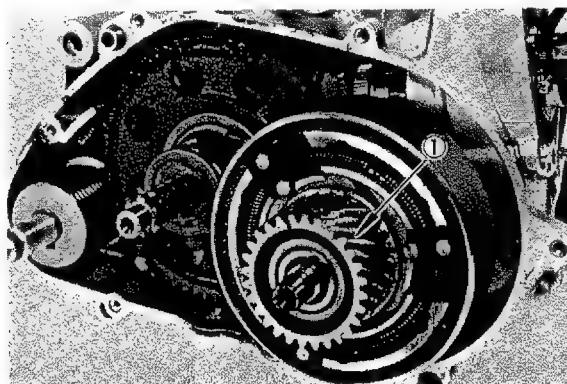
1. Circlip      2. Gear holder      3. Primary drive gear

2. Install the flywheel on the crankshaft temporarily. Then use the flywheel holding tool to hold the flywheel. Loosen the clutch locknut.



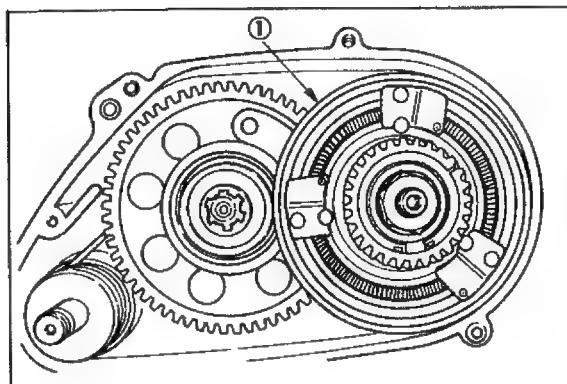
1. Flywheel holding tool      2. Torque wrench

3. Remove 2nd gear clutch assembly.



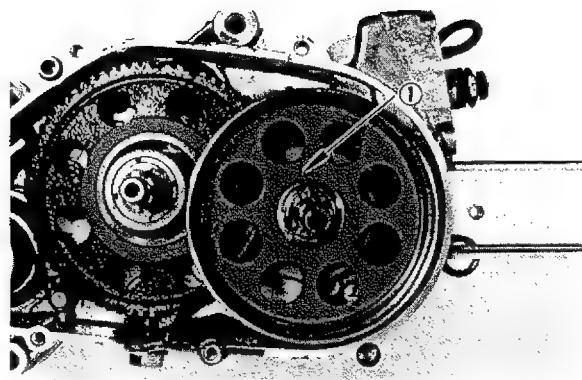
1. 2nd gear clutch assembly

4. Remove 1st gear clutch assembly.



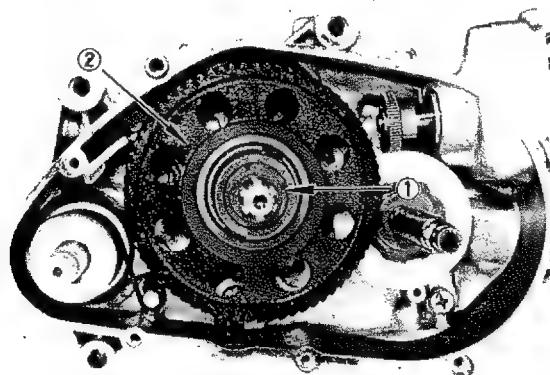
1. 1st gear clutch assembly

5. Remove clutch housing.



1. Clutch housing

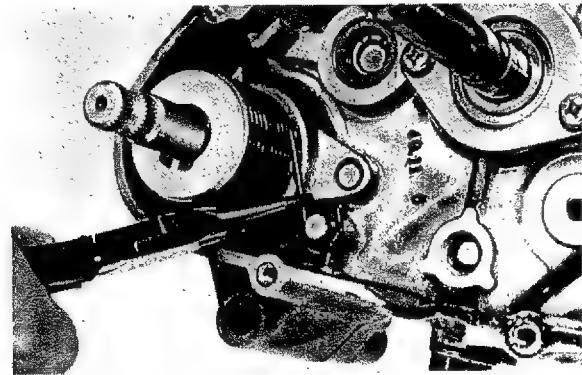
6. Remove one-way clutch and driven gear.



1. One way clutch  
2. Driven gear

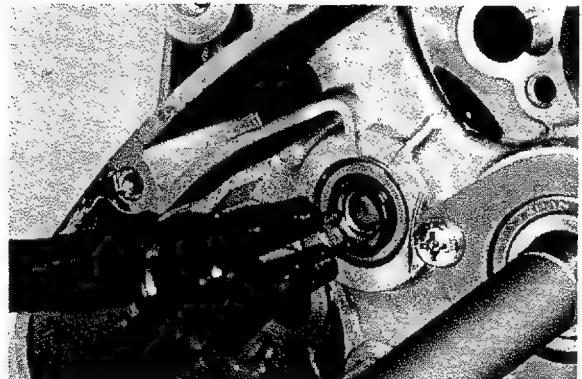
### Kick axle assembly

Pull straight out the kick axle.



### Shifter rod assembly

Remove circlip from right side of the drive axle, then remove shift spring, spring retainer and shifter rod assembly.



## Crankcase

1. Working in a crisscross pattern, loosen Phillips head screws 1/4 turn each. Remove them after all are loosened.
2. Install crankcase separating tool as shown. Use a thick plain washer to protect end of crankshaft.

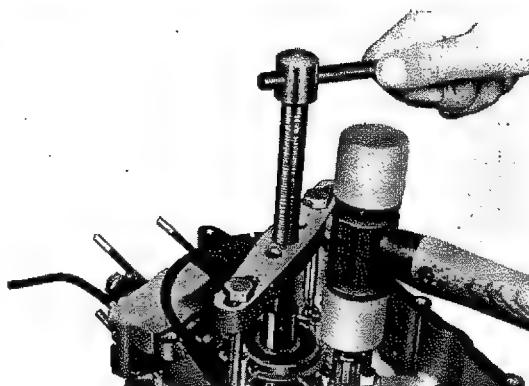
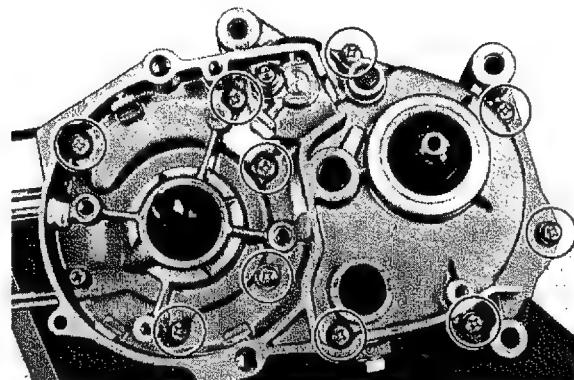
**NOTE:**

Fully tighten the tool securing bolts, but make sure the tool body is parallel with the case. If necessary, one screw may be backed out slightly to level tool body.

3. As pressure is applied, alternately tap on the front engine mounting boss, the transmission shafts and the shift drum.

**CAUTION:**

Use soft hammer to tap on the case half. Tap only on reinforced portions of case. Do not tap on gasket mating surface. Work slowly and carefully. Make sure the case halves separate evenly. If one end "hangs up", take pressure off the push screw, realign and start over. If the halves are reluctant to separate, check for a remaining case screw or fitting. Do not force.

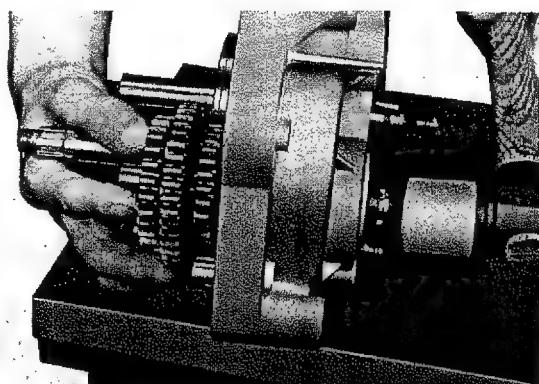


## Transmission

Transmission shafts should be removed as an assembly. Tap lightly on the transmission drive shaft with a soft hammer to remove.

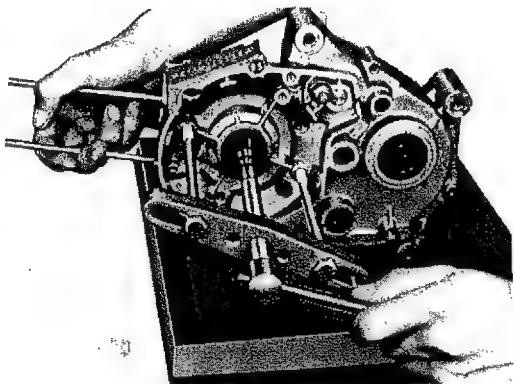
**NOTE:**

Remove assembly carefully. Note the position of each part. Pay particular attention to the location and direction of shift forks.



### Crankshaft assembly

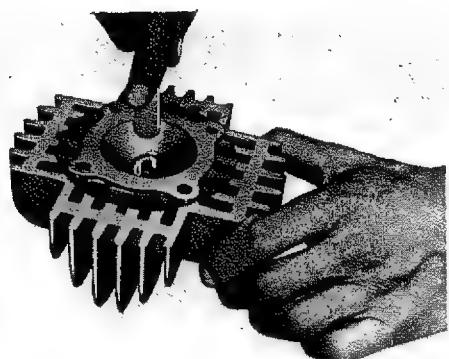
Remove crankshaft assembly with the crankcase separating tool.



## INSPECTION AND REPAIRING

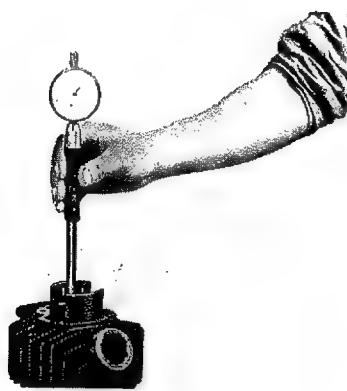
### Cylinder head

1. Remove spark plug.
2. Using a rounded scraper, remove carbon deposits from combustion chamber.  
Take care to avoid damaging the spark plug threads. Do not use a sharp instrument; avoid scratching aluminium.
3. Place on a surface plate. There should be no warpage. Correct by re-surfacing as follows:  
Place 400 ~ 600 grit wet sandpaper on surface plate and re-surface head using a figure-eight sanding pattern. Rotate head several times to avoid removing too much material from one side.



## Cylinder

1. Hone cylinder bore using a hone with fine stones. Hone no more than required to remove all wear marks.
2. Using a cylinder gauge set to standard bore size, measure the cylinder. Measure front-to-rear and side-to-side at top, center and bottom just above exhaust port. Compare minimum and maximum measurements. If over tolerance and not correctable by honing, rebore to next over-size.

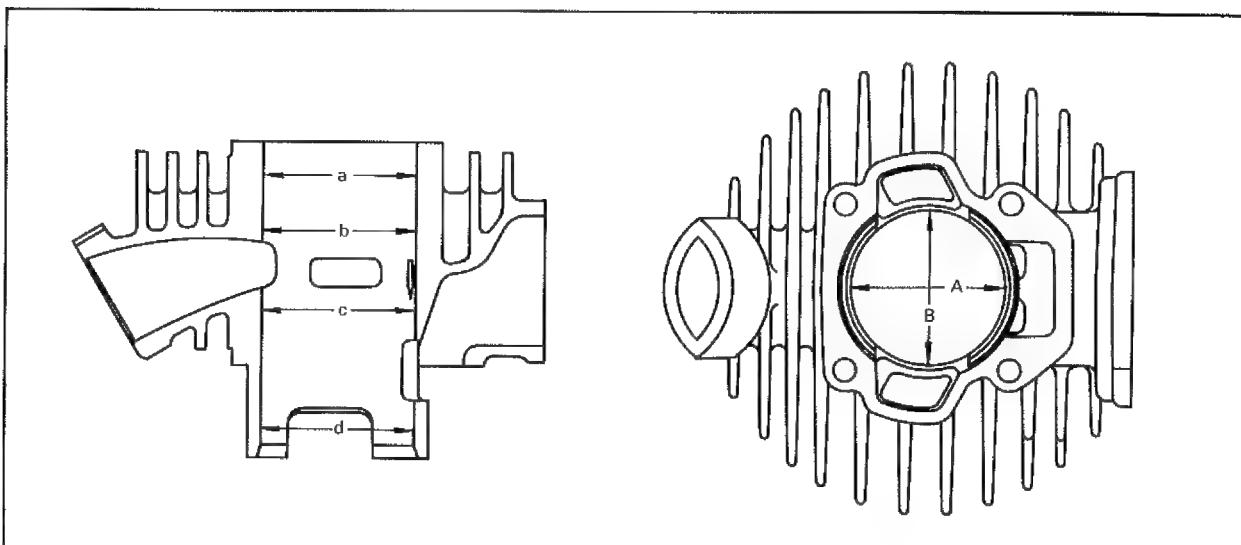


Max. allowable taper:

0.05 mm

Max. allowable out-of-round:

0.01 mm

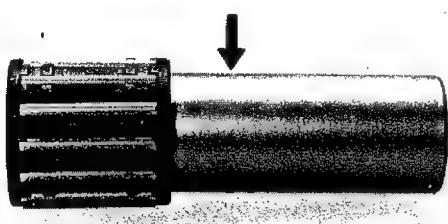


## Piston pin and bearing

1. Check the pin for signs of wear. If any wear is evident, replace pin and bearing.
2. Check the pin and bearing for signs of heat discoloration. If excessive (heavily blued), replace both.

### NOTE:

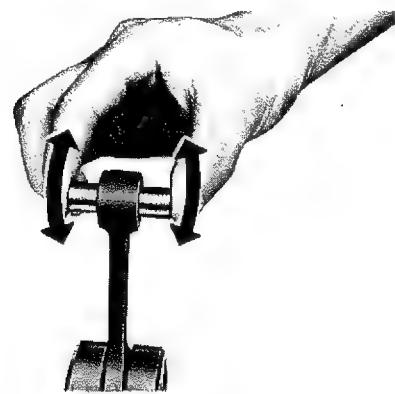
Shiny spots on pin from race wear are normal. Replace pin and bearing only if wear is excessive (indentation on pin, etc.)



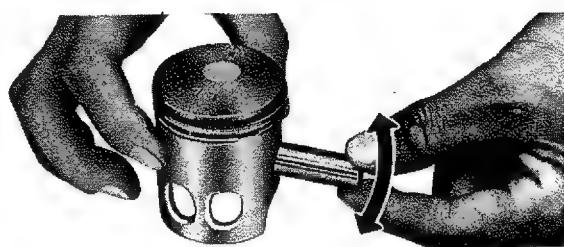
3. Check the bearing cage for excessive wear or damage.  
Check the rollers for signs of flat spots.  
if found, replace pin and bearing.



4. Apply a light film of oil to pin and bearing surfaces. Install in connecting rod small end. Check for play. There should be no noticeable vertical play. If play exists, check connecting rod small end for wear. (Replace pin and bearing or all as required.)



5. The piston pin should have no noticeable free play in piston. If the piston pin is loose, replace the pin and/or the piston.



### Piston

1. Remove piston ring.



2. Remove carbon deposits from piston crown.



3. Remove carbon deposits from ring grooves.



4. Remove score marks and lacquer deposits from sides of piston using 400 ~ 600 grit wet sandpaper. Sand in a cross-hatch pattern. Do not sand excessively.



5. Wash piston in solvent and wipe dry.
6. Using an outside micrometer, measure piston diameter. The piston is cam-ground and tapered. The only measuring point is at right angles to the piston pin holes about 10 mm from bottom of piston. Compare piston diameter to cylinder bore measurements.

Piston maximum diameter subtracted from minimum cylinder diameter gives piston clearance. If beyond tolerance, hone cylinder to tolerance or re-bore to next over-size and fit over-size piston.



	Min.	Max.
Piston clearance	0.025 mm	0.030 mm
Maximum wear limit	0.1 mm	

#### Piston rings

1. Check rings for scoring. If any severe scratches are noticed, replace set.
2. Insert each ring into cylinder. Push down approximately 20 mm using piston crown to maintain right-angle to bore. Measure installed end gap. If beyond tolerance, replace set.

	Min.	Max.
Top ring end gap, installed	0.15 mm	0.35 mm
2nd ring end gap, installed	0.15 mm	0.35 mm



3. With rings installed in grooves, insert feeler gauge between ring side and groove. If beyond tolerance, replace ring and/or piston as required.

#### Top/2nd ring side clearance

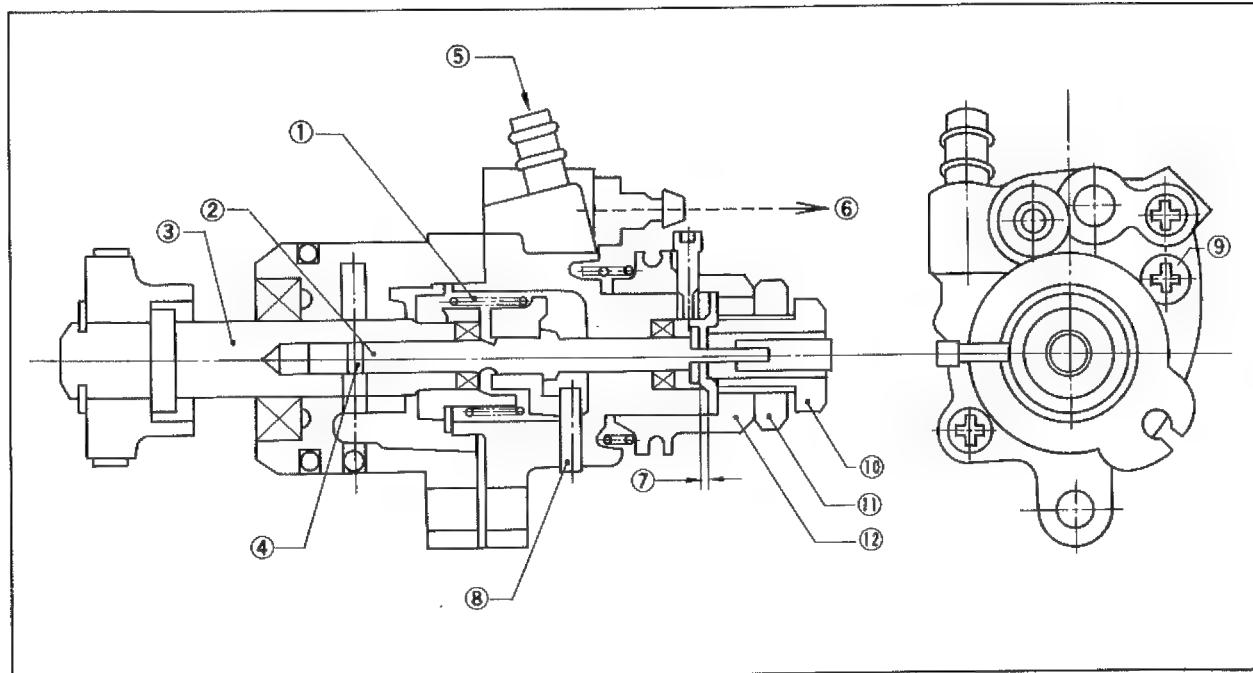
	Min.	Max.
LB50 II AC	0.03 mm	0.05 mm
LB80 II AC	0.02 mm	0.06 mm



4. Check ring expander. If worn excessively, or broken, replace ring set.

## Autolube pump

### 1. Construction of the oil pump



- 1. Plunger return spring
- 2. Plunger
- 3. Distributor
- 4. Chamber for oil charge

- 5. Inlet
- 6. Outlet
- 7. Min. stroke
- 8. Plunger pin
- 9. Bleed screw

- 10. Adjusting bolt
- 11. Locknut
- 12. Adjust pulley

### 2. Function of the oil pump

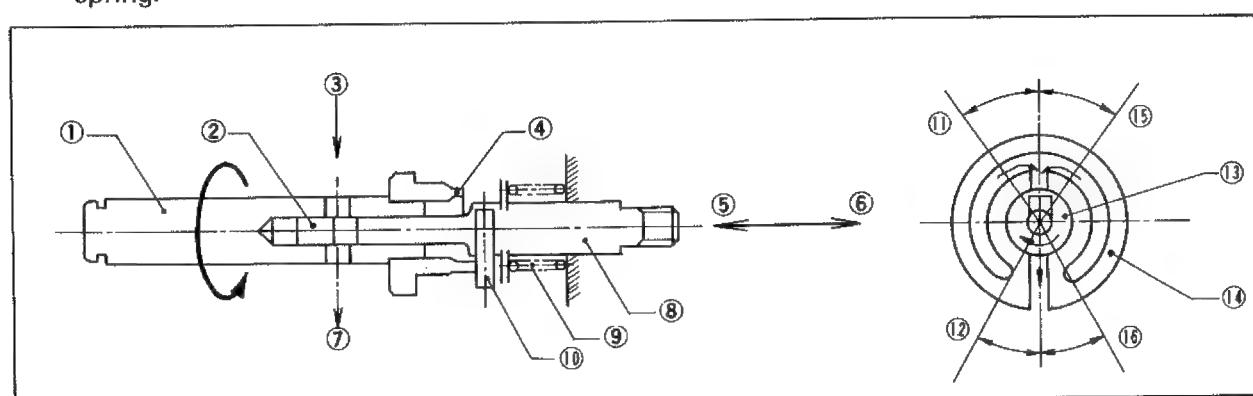
When the plunger begins to reciprocate, oil is drawn in and out from the rotating distributor.

#### SUCTION OF OIL:

Oil is drawn in by the plunger which is pushed back by the plunger return spring.

#### DISCHARGE OF OIL:

Oil is forced out by the plunger when it is pushed by the plunger pin contacting the plunger cam. The cam is meshed with the rotating distributor by means of a dog.



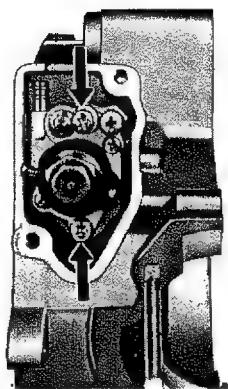
- 1. Distributor
- 2. Plug
- 3. Inlet
- 4. Plunger cam
- 5. Outlet

- 6. Inlet
- 7. Outlet
- 8. Plunger
- 9. Plunger return spring
- 10. Plunger pin

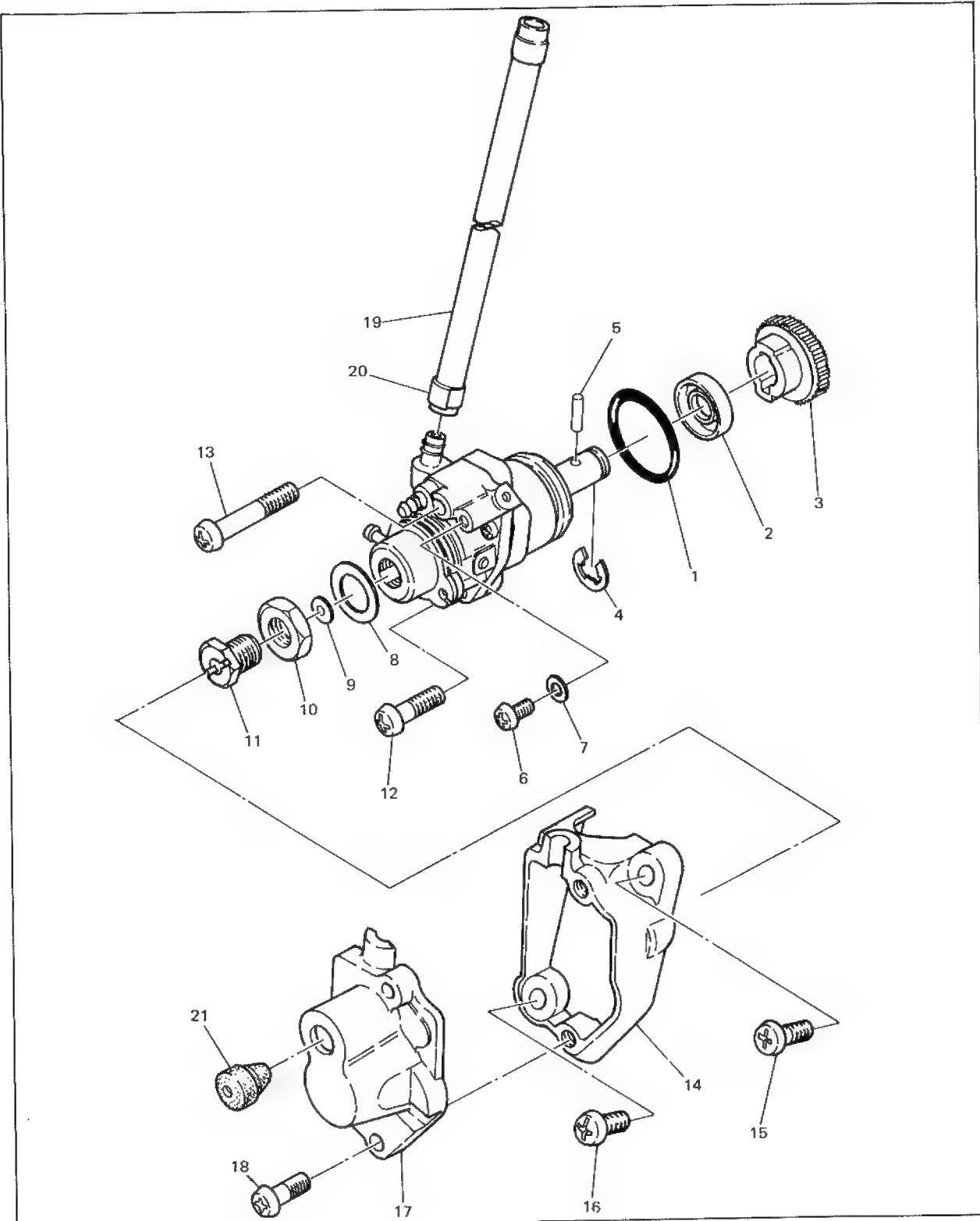
- 11. Beginning of suction
- 12. End of discharge
- 13. Distributor
- 14. Pump case
- 15. End of suction stroke
- 16. Beginning of discharge

3. Removal and disassembly

- a. Remove (two) Phillips screws securing pump to crankcase cover. Remove pump.
- b. Disassembly is straight forward and can be accomplished by the parts illustration.



## Oil pump



- 1. O-ring
- 2. Oil seal (S-10-21-5)
- 3. Worm wheel gear (56T)
- 4. Circlip (E07)
- 5. Dowel pin (3-14)
- 6. Bind screw
- 7. Bleeder bolt gasket

- 8. Shim
- 9. Adjusting plate
- 10. Hexagon nut
- 11. Adjusting bolt
- 12. Pan head screw
- 13. Pan head screw
- 14. Oil pump cover 1

- 15. Pan head screw
- 16. Pan head screw
- 17. Oil pump cover 2
- 18. Pan head screw
- 19. Delivery pipe
- 20. Delivery pipe clip
- 21. Grommet

4. Troubleshooting and repair
  - a. Wear or an internal malfunction may cause pump output to vary from the factory setting. This situation is, however, extremely rare. If output is suspect, check the following:
    - 1) Obstructions in delivery line to pump or from pump to cylinder.
    - 2) Worn or damaged pump body seal or crankcase cover seal.
    - 3) Missing or improperly installed check ball or spring.
    - 4) Improperly installed or routed oil delivery line(s).
  - 5) Loose fitting(s) allowing air entry to pump and/or engine.
- b. If all inspections show no obvious problems and output is still suspect, connect the delivery line from the pump to a graduated container (cc). Keep the delivery line short. Remove spark plug. Open throttle to full open position. Operate kick starter continuously and count the oil pump plunger strokes. If output is not to specification, replace pump assembly.

---

#### **Autolube Pump Specifications**

##### **LB50 II AC:**

###### **Maximum Throttle**

Min. ....	0.55 mm
Max. ....	0.65 mm

###### **Minimum Throttle**

Min. ....	0.20 mm
Max. ....	0.25 mm

##### **LB80 II AC:**

###### **Maximum Throttle**

Min. ....	0.80 mm
Max. ....	0.95 mm

###### **Minimum Throttle**

Min. ....	0.25 mm
Max. ....	0.30 mm

---

#### **5. Reassembly**

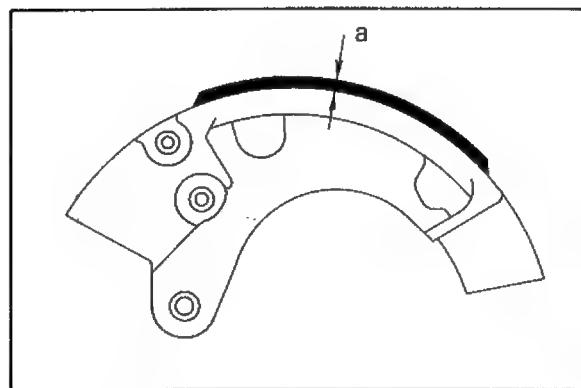
Always install a new pump case gasket.

## Clutch

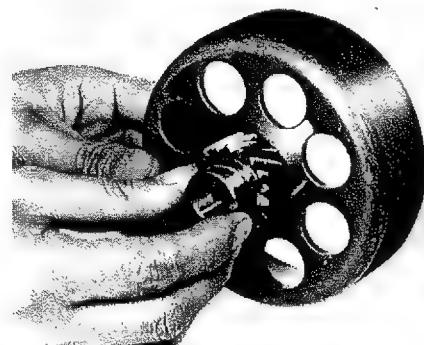
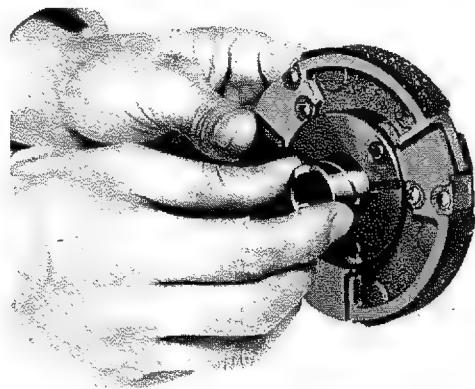
1. Measure the clutch shoes lining thickness. If their minimum thickness exceeds tolerance, replace.

	New	Wear Limit
Clutch shoe lining thickness	2.5 mm	2.0 mm

2. Check scratches on the inner surface of clutch housing. Remove scratches by lightly and evenly polishing with emery cloth.
3. Thoroughly clean the second clutch assembly and spacer. Apply a light film of oil on the bushing surface and spacer. Fit the spacer into the bushing. It should be a smooth, thumb-press-fit. The spacer should rotate smoothly within the bushing.
4. Thoroughly clean the clutch housing assembly and spacer. Apply a light film of oil on the spacer into the bushing. It should be a smooth, thumb-press-fit. The spacer should rotate smoothly within the bushing.



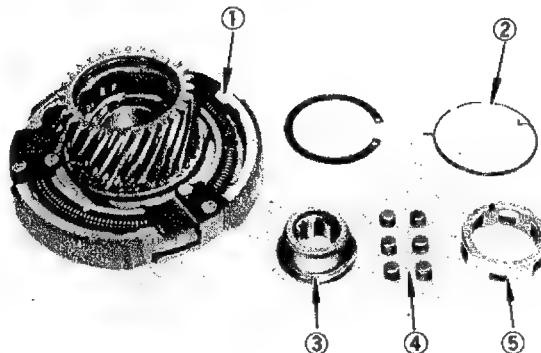
a. 2.5 mm



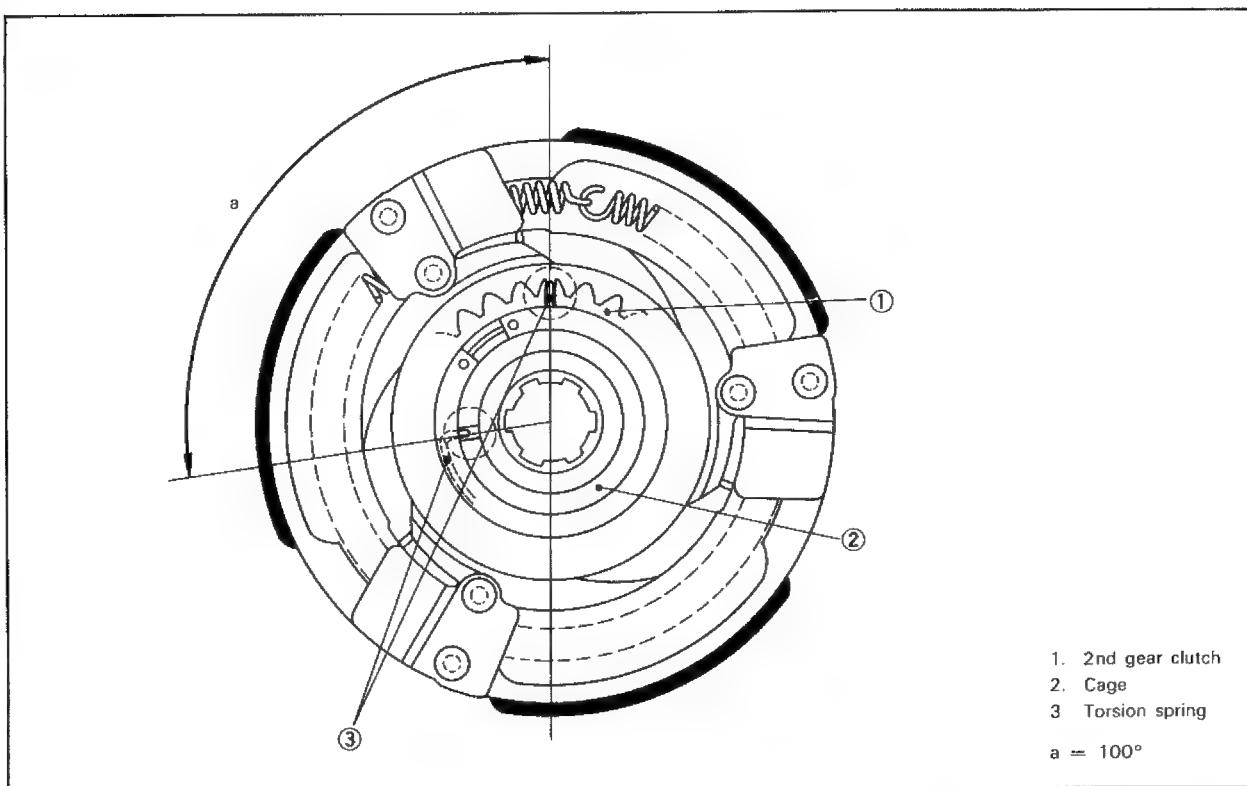
- Check the bushing, spacer and crank shaft for signs of galling, heat damage, etc. If severe, replace as required.
- Check the spring, rollers, cage and clutch housing boss for signs of heat damage, wear, etc. If severe, replace as required.

**NOTE:**

The oneway clutch should be installed as illustrated, with the hole in the side of the case directed outward.

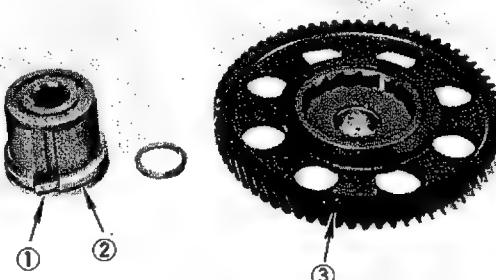


1. 2nd clutch      3. Clutch housing boss      5. Cage  
2. Spring            4. Roller



1. 2nd gear clutch  
2. Cage  
3 Torsion spring  
 $a = 100^\circ$

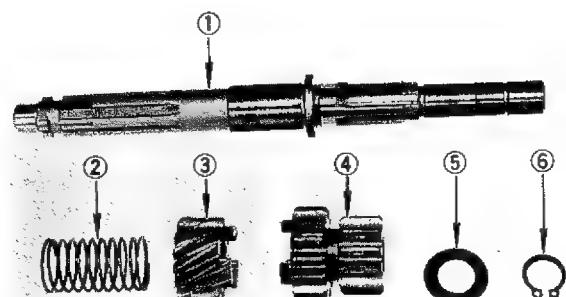
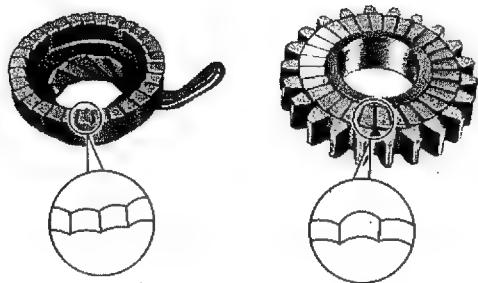
- Check the oneway pawls, pawl spring and driven gear for signs of wear, heat damage etc. If severe, replace as required.



1. Pawl  
2. Pawl spring  
3. Driven gear

## Kick starter

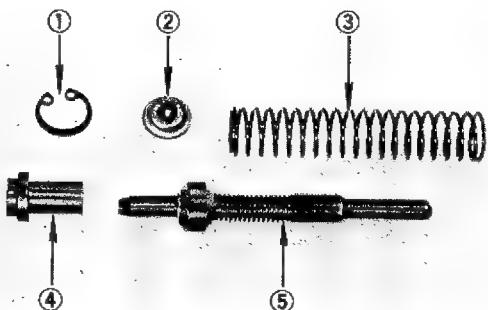
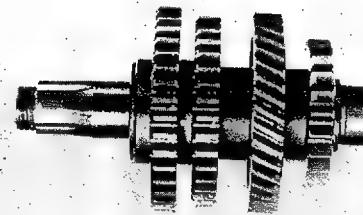
1. Check the ratchet teeth on the kick gear and ratchet wheel. The mating edges should fit flush against each other. If there is severe rounding off, replace as set.
2. Check to see that the kick gear spins freely on the kick axle. If not, replace either or both as required. Replace if any signs of galling are found.
3. Check to see that the ratchet wheel (splined) slides freely on the kick axle. Check for burrs or other damage. Replace as required.
4. Check axle and wheel splines for wear. The ratchet wheel is a fairly loose fit on splines. However, if wheel is so loose it catches on shaft keeping ratchet wheel spring from forcing it out, replace.
5. Check the ratchet wheel and kick gear for damage, replace as required.
6. Check the kick pinion gear, second pinion gear and spring for damage, scratches, wear and fatigue.



1. Main axle	4. Second pinion gear
2. Return spring	5. Shim
3. Kick pinion gear	6. Circlip

## Sub-Transmission

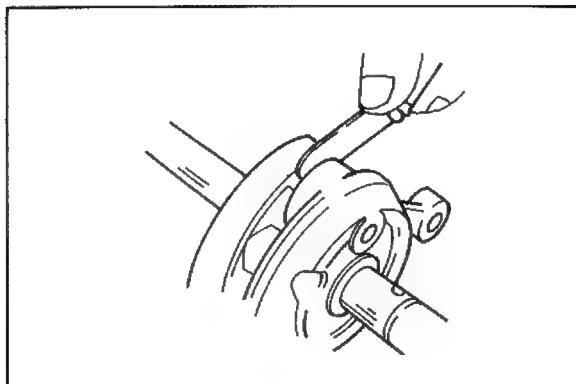
1. Carefully inspect each gear. Look for signs of obvious heat damage (blue discoloration). Check the gear teeth for signs of pitting, galling or extreme wear. Replace as required.
2. Check to see that each gear moves freely on its shaft.
3. Check the shifter rod assembly for damage, wear and fatigue of springs.



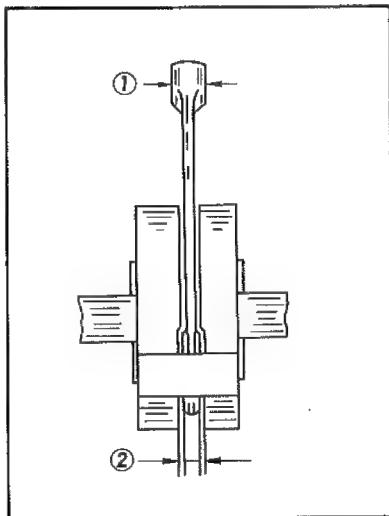
1. Circlip                  4. Spring retainer  
2. Washer                  5. Shifter rod  
3. Shift spring

## Crankshaft

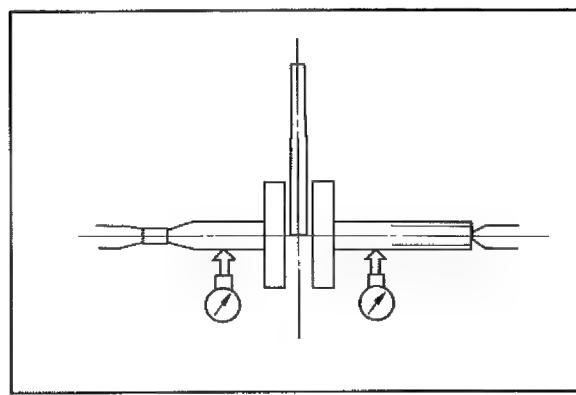
1. The crankshaft requires the highest degree of accuracy in engineering and servicing of all the engine parts.
2. The crankshaft is more susceptible to wear, and therefore, the crank bearings must be inspected with special care.
3. Check crankshaft components per chart.



Checking side clearance



1. Axial play
2. Side clearance



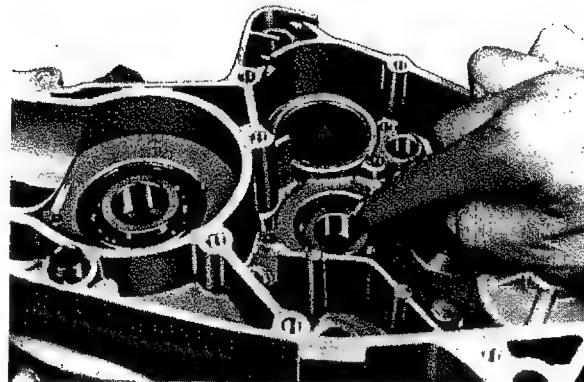
Checking crankshaft runout

Check connecting rod axial play at small end (to determine the amount of wear of crank pin and bearing at big end).	Small end play should not exceed 2.0 mm.	If small end play exceeds 2 mm, disassemble the crankshaft, check connecting rod, crank pin and big end bearing. Replace defective parts. Play after reassembly should be within 0.8 ~ 1.0 mm.
Check the connecting rod side clearance at big end.	Move the connecting rod to one side and insert a feeler gauge. Big end side clearance play should be within 0.2 ~ 0.5 mm.	If excessive side clearance play is present, 0.6 mm or more, disassemble the crankshaft and replace any worn parts.
Check crankshaft assembly runout. (Misalignment of crankshaft parts)	Dial gauge readings should be within 0.02 mm.	Correct any misalignment by tapping the flywheel with a brass hammer and by using a wedge.

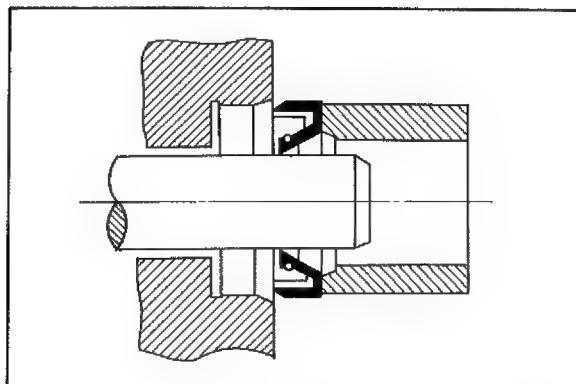
## Bearings and oil seals

### 1. Inspection

- a. After cleaning and lubricating bearings, rotate inner race with a finger. If rough spots are noticed, replace the bearing.



- b. Check oil seal lips for damage and wear. Replace as required.



### 2. Removal

- a. Pry oil seal(s) out of place using a slotted head screwdriver.  
Always replace all oil seals when overhauling engine.

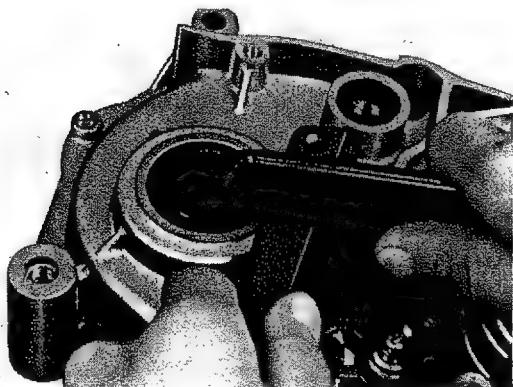
**NOTE:**

Place a piece of wood under the screwdriver to prevent damage to case.

- b. Drive out bearing(s) with socket and hammer.

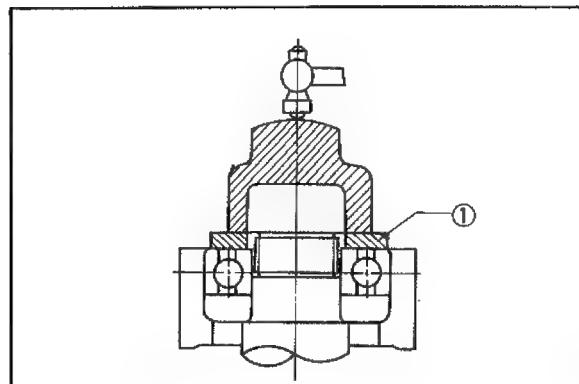
**NOTE:**

Bearing(s) are most easily removed or installed if the cases are first heated to approximately 100°C. Bring the case up to proper temperature slowly. Use an oven.



### 3. Installation

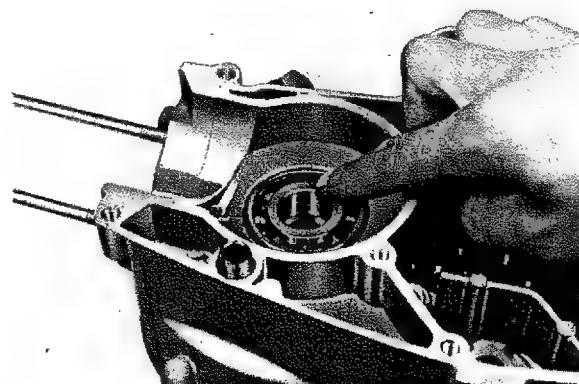
Install bearing(s) and oil seal(s) with their manufacturer's marks or numbers facing outward. (In other words, the stamped letters must be on the exposed view side). When installing bearing(s) or oil seal(s), apply a light coating of light-weight lithium base grease to balls and seal lip(s).



1. Spacer

### Crankcase

1. Thoroughly wash the case halves in mild solvent.
2. Clean all gasket mating surfaces and crankcase mating surfaces thoroughly.
3. Visually inspect case halves for any cracks, road damage, etc.
4. Check all fittings not previously removed for signs of loosening or damage.
5. If bearings have been removed, check their seats for signs of damage (such as the bearing spinning in the seat, etc.)
6. Check oil delivery passages in transfer ports for signs of blockage.
7. If bearings have not been removed, oil them thoroughly immediately after washing and drying. Rotate the bearings checking for roughness indicating damaged races or balls.
8. Check needle bearing(s) in transmission section for damage. Replace as required.



## ENGINE ASSEMBLING AND ADJUSTMENT

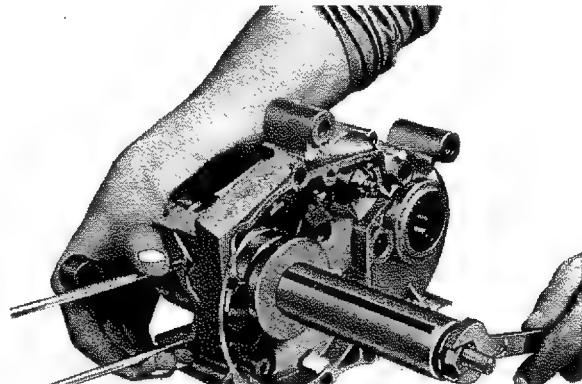
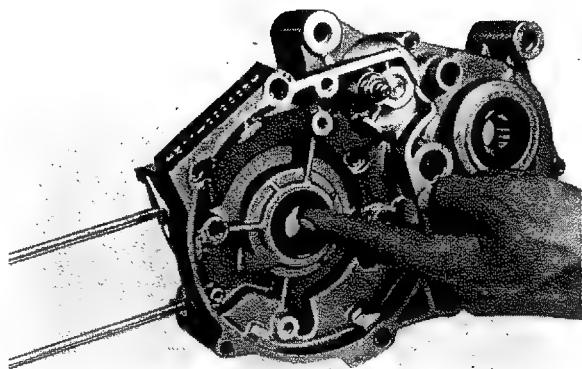
### Crankshaft installation

After all bearings and seals have been installed in both crankcase halves, install crankshaft as follows:

#### CAUTION:

To protect the crankshaft against scratches or to facilitate the operation of installation:

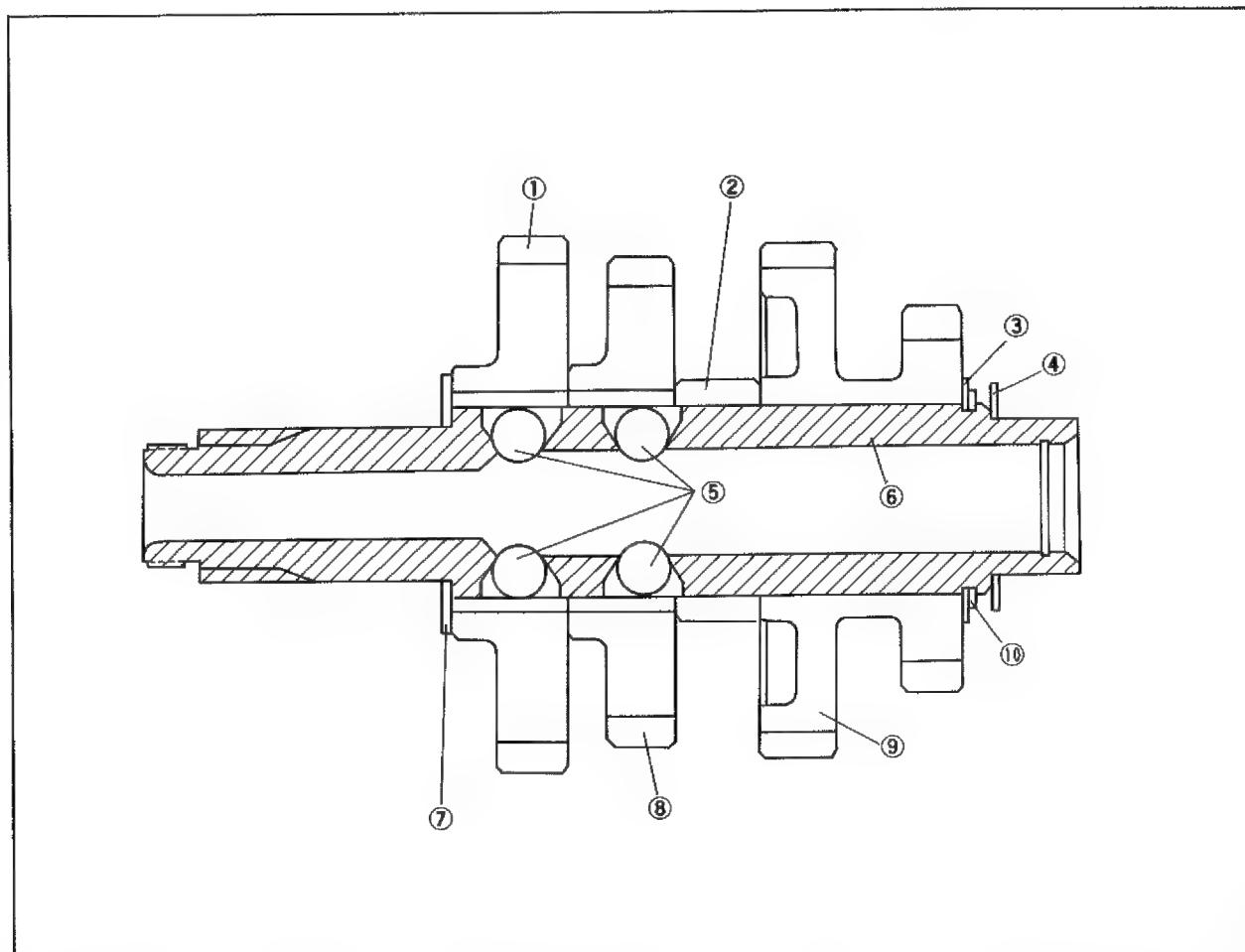
Pack the oil seal lips with grease. Apply engine oil to each bearing.



1. Set the crankshaft into left case half and install crankshaft installing tool.
2. Hold the connecting rod at top dead center with one hand while turning the handle of the installing tool with the other. Operate tool until crankshaft bottoms against bearing.

## **Sub-Transmission installation**

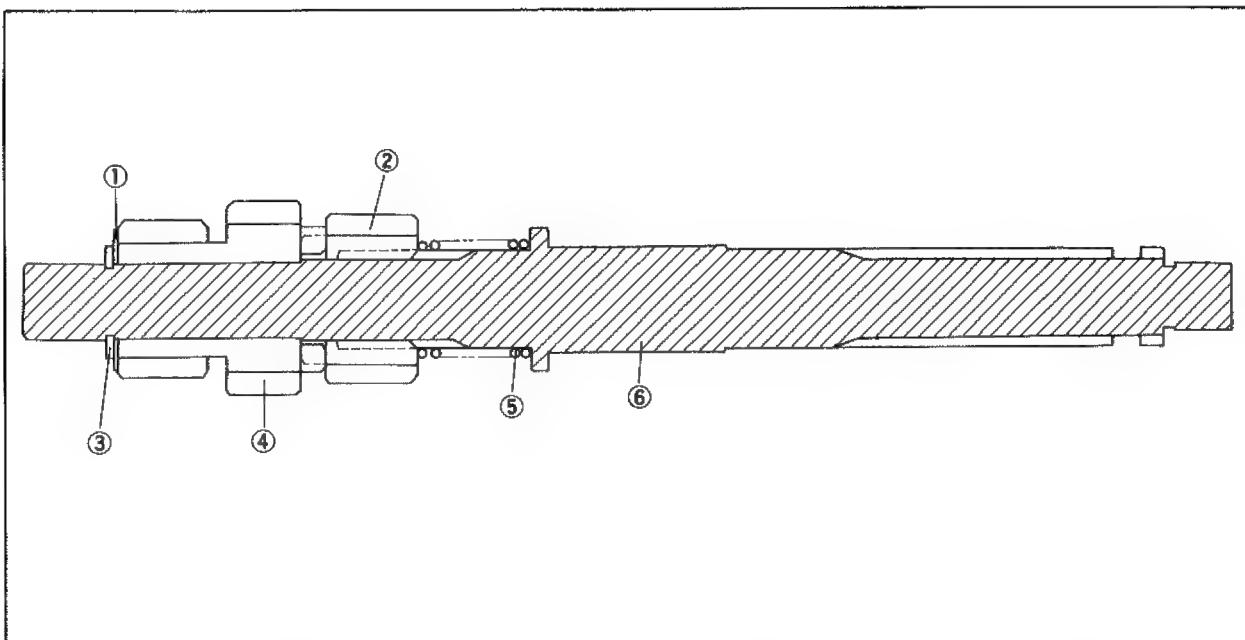
1. Paying particular attention to the illustration, assemble the transmission shafts.



1. 1st wheel gear  
2. Distance collar  
3. Washer  
4. Plate washer

5. Ball  
6. Drive axle  
7. Drive axle spacer

8. 2nd wheel gear  
9. Kick idle gear  
10. Circlip

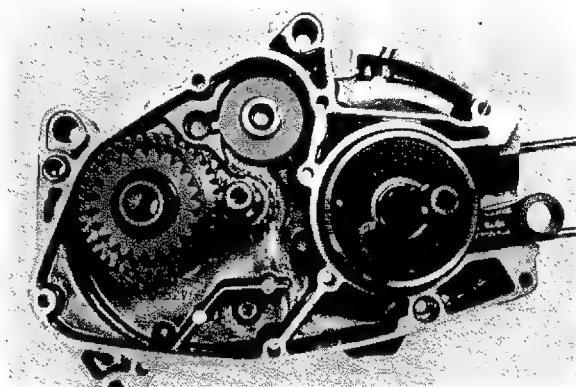


1. Shim	3. Circlip	5. Return spring
2. Kick pinion gear	4. 2nd pinion gear	6. Main axle

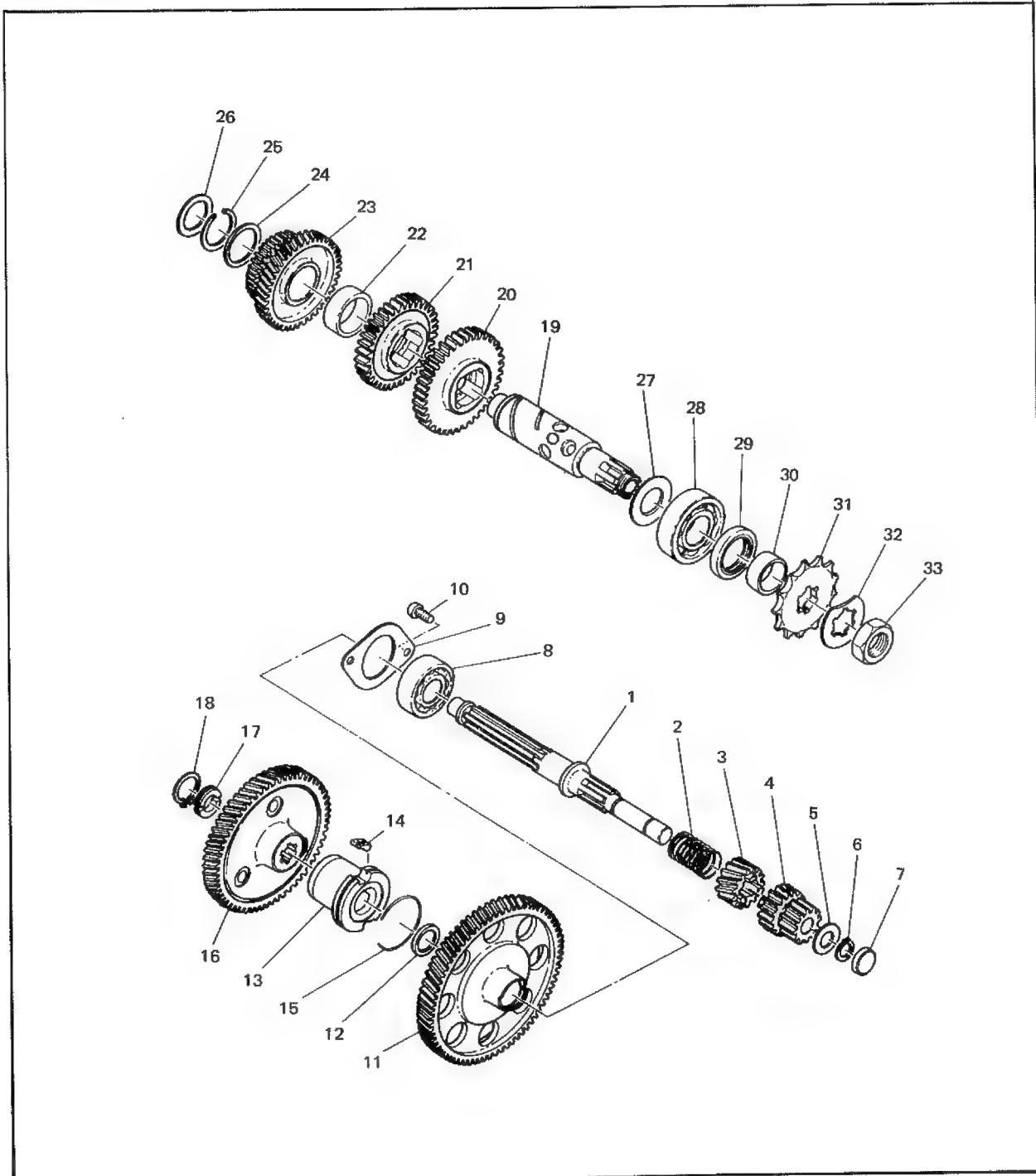
2. Install the assembly into the left case half, shafts are fully seated.
3. Check to see that all parts move freely prior to installing right case half. Check for correct sub-transmission operation and make certain that all loose shims are in place.

**NOTE:**

After assembly, apply a liberal amount of gear oil to the gear teeth.

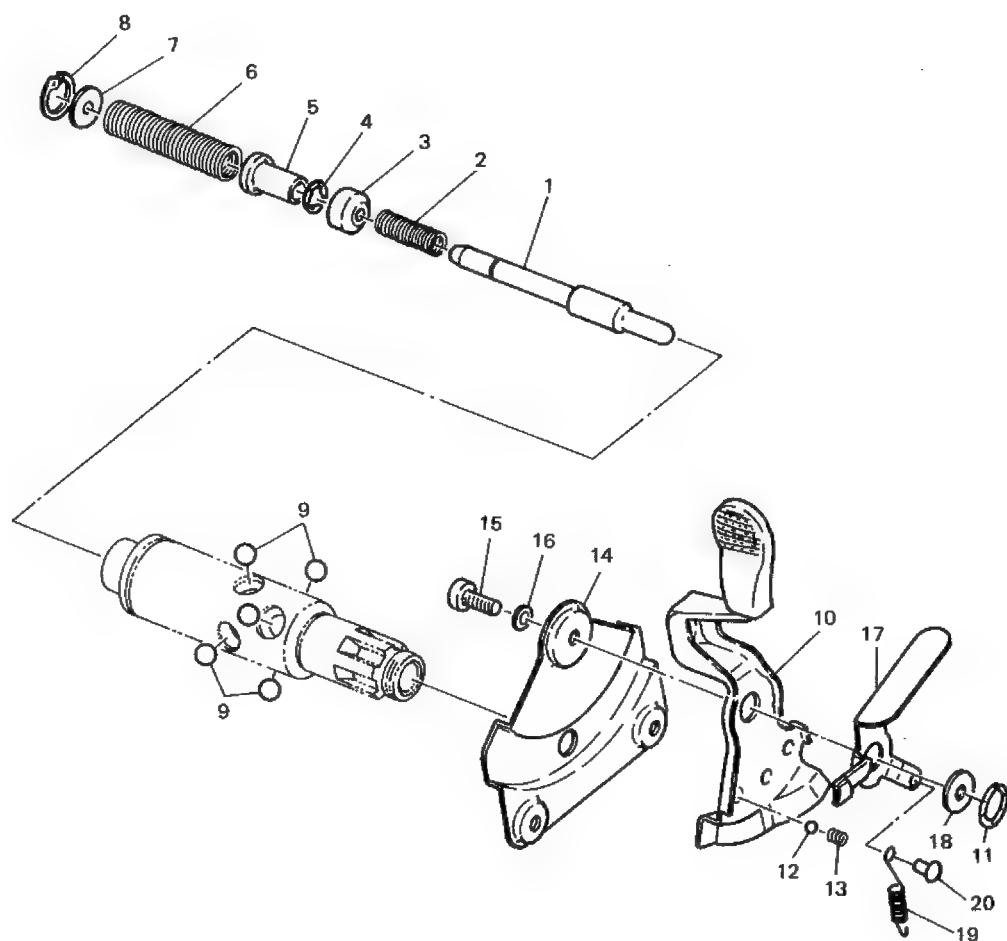


## Transmission



1. Main axle	12. Plate washer	23. Kick idle gear
2. Spring	13. One way comp. boss	24. Washer
3. Kick pinion gear	14. One way pawl	25. Circlip
4. 2nd pinion gear	15. Pawl spring	26. Plate washer
5. Shim	16. Primary driven gear comp. 2	27. Drive axle spacer
6. Circlip	17. Kick gear holder	28. Bearing
7. Blind plug	18. Circlip	29. Oil seal
8. Bearing	19. Drive axle	30. Distance collar
9. Bearing cover plate	20. 1st wheel gear	31. Drive sprocket
10. Panhead screw	21. 2nd wheel gear	32. Lock washer
11. Primary driven gear comp. 1	22. Distance collar	33. Lock nut

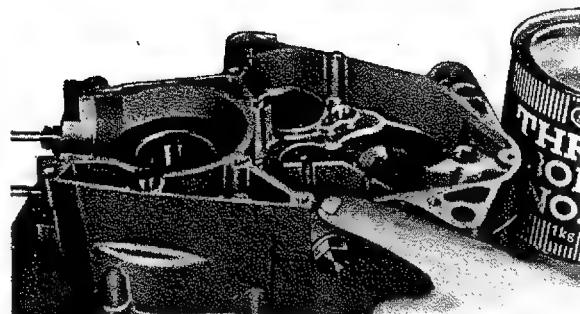
## Shifter



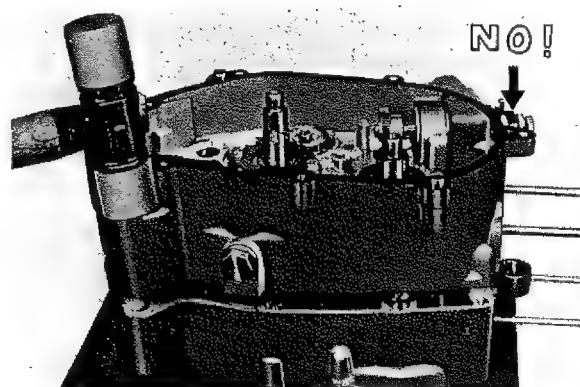
1. Shifter rod	6. Shift spring	11. Wave washer	16. Spring washer
2. Damper spring	7. Washer	12. Ball	17. Stopper lever
3. Shifter head	8. Circlip	13. Stopper spring	18. Washer
4. Circlip	9. Ball	14. Dust seal	19. Lever return spring
5. Spring retainer	10. Shift lever	15. Panhead screw	20. Spring hook

## Crankcase

1. Apply Yamaha Bond No. 4 to the mating surfaces of case halves. Apply thoroughly, overall mating surfaces. It is advisable that the right hand case mating surface be coated.



2. Set the crankcase right half onto the shafts and tap lightly on the case with a soft hammer to assemble.



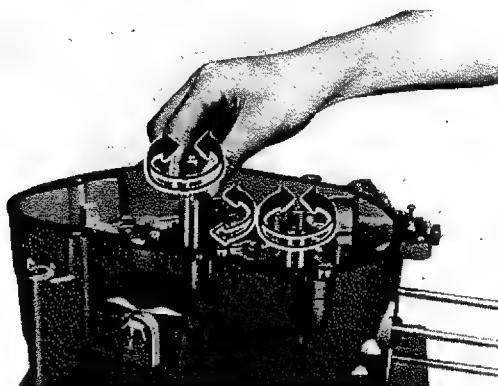
### NOTE:

Do not tap on machined surface or end of crankshaft.

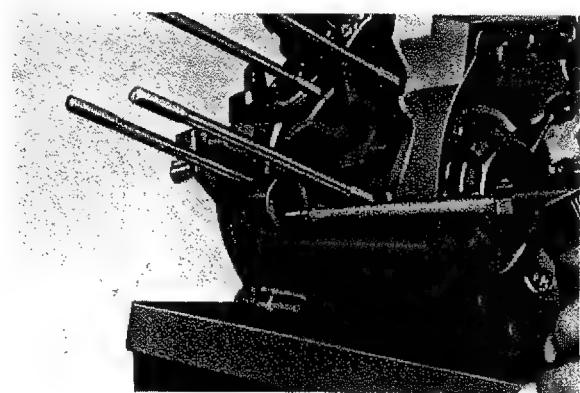
After putting together both case halves, check the axles, shift cam and crankshaft for smooth rotation by turning by hand.

After tightening the case bolts, check again for smooth rotation.

Interference for all bolts is about 10 mm. Be careful so that all bolts are in correct position.

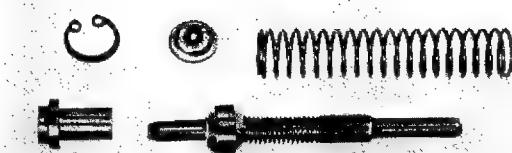


3. Install all crankcase bolts and tighten in stages using crisscross pattern.
4. After reassembly, apply a liberal coating of two-stroke oil to the crank pin and bearing and into each crankshaft bearing oil delivery hole.



## **Shifter**

Install the shifter rod, spring retainer, washer and circlip into the drive axle.

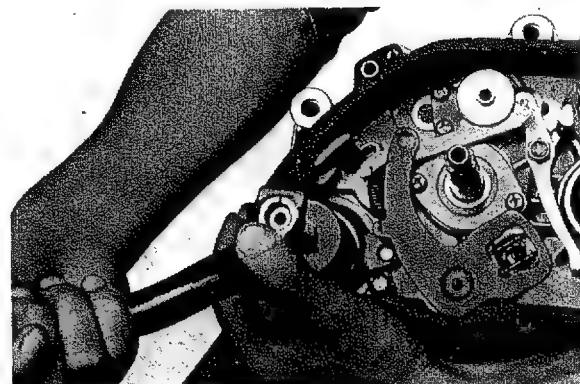
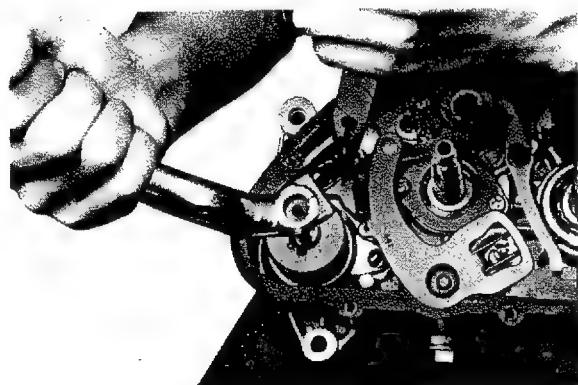


## **Kick starter assembly**

1. Install the kick axle assembly in place.
2. By turning the kick spring, pull it into the crankcase.
3. Hook the kick spring on to the spring stopper.

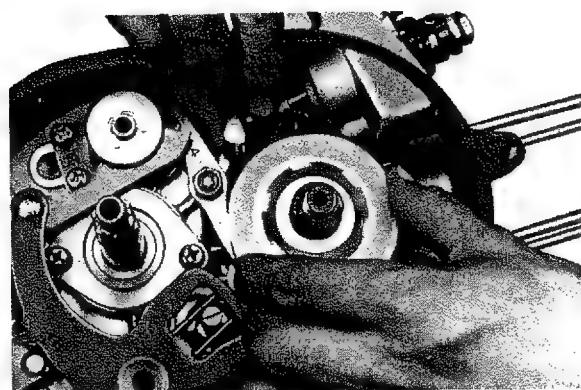
  

4. By turning the kick crank, push the kick axle into position.



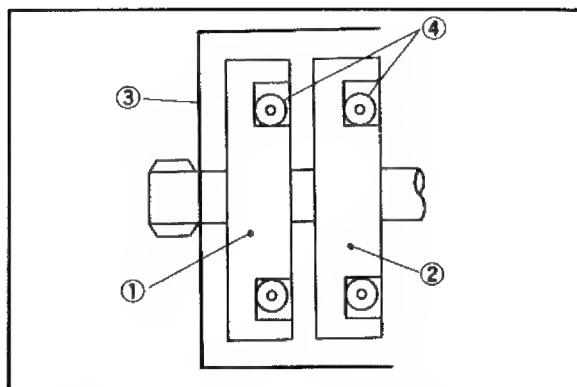
## **Pump drive gear and primary drive gear**

By turning the oil pump gear with your fingers, install the pump drive gear.  
Do not forget to install the drive gear locating pin into the crankshaft.



### Primary gears and clutches

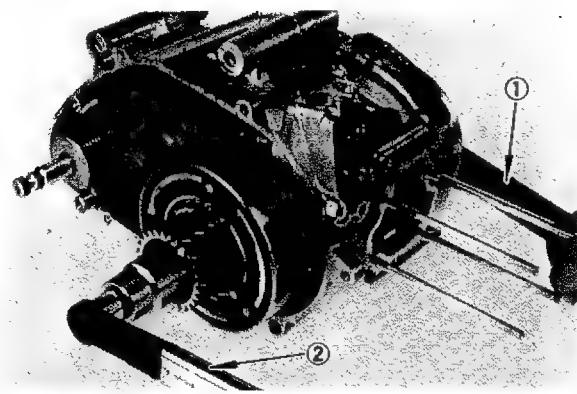
1. Install the driven gear and oneway clutch boss onto the main axle.
2. Install the clutch housing, thrust plate and spacer onto the crank shaft.
3. Install the 1st clutch assembly and 2nd clutch assembly onto the crank shaft as shown in the illustration.



1. 1st clutch  
2. 2nd clutch  
3. Clutch housing  
4. Clutch weight spring

4. Tighten the locknut.

**Tightening torque:**  
28 Nm (2.8 m · kg)



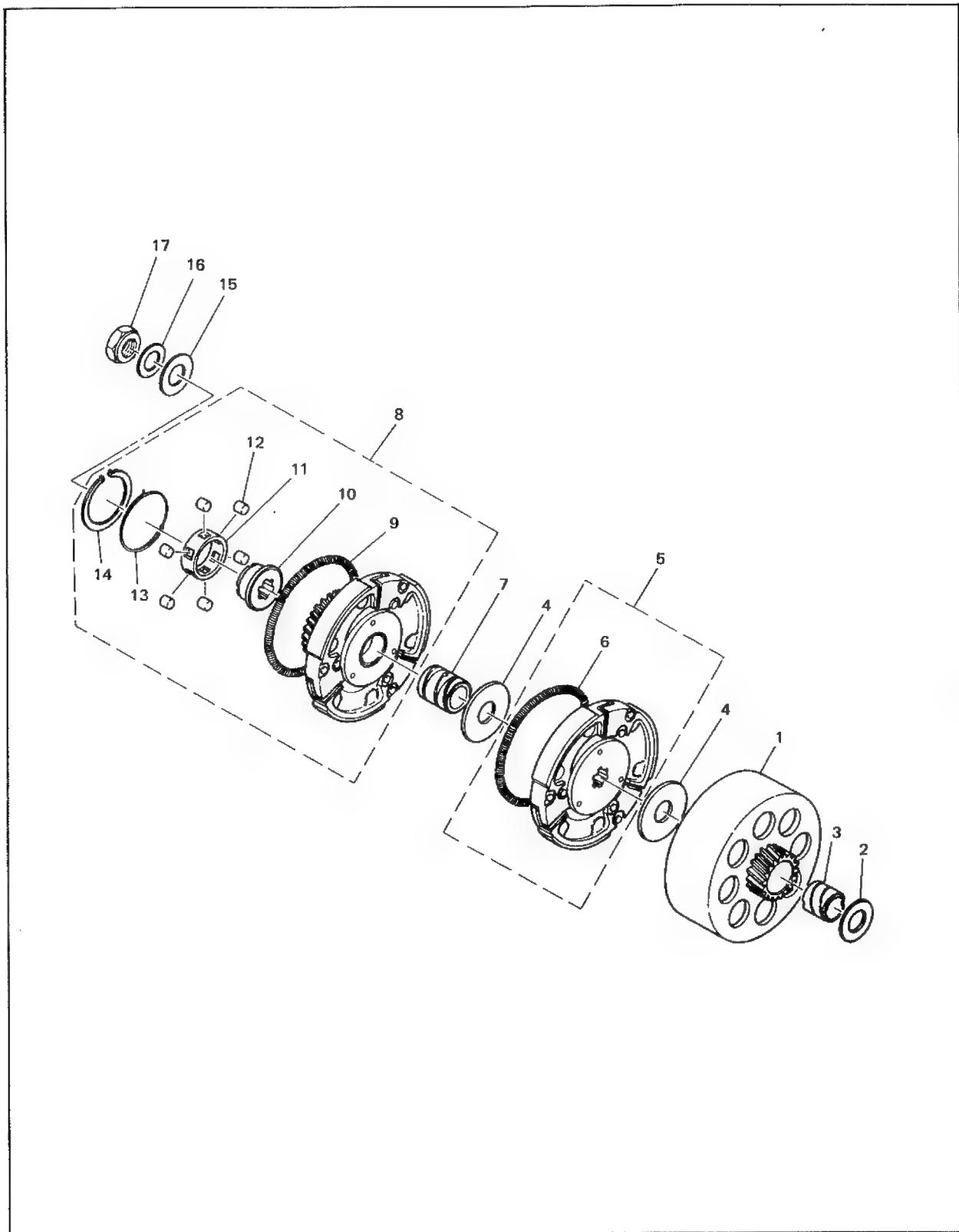
1. Flywheel holding tool  
2. Torque wrench

5. Install the primary driven gear onto the main axle.

### Crankcase cover, right

Install crankcase cover (right).

## Clutch



- 1. Primary gear ass'y
- 2. Plate washer
- 3. Spacer
- 4. Plate washer
- 5. Clutch carrier ass'y 1
- 6. Tension spring

- 7. Spacer
- 8. Clutch carrier ass'y 2
- 9. Tension spring
- 10. Clutch housing boss
- 11. Cage
- 12. Dowel pin

- 13. Spring
- 14. Clip
- 15. Plate washer
- 16. Belleville spring
- 17. Lock nut

## Piston

1. During reassembly, coat the piston ring grooves, piston skirt areas, piston pin and bearing with two-stroke oil.
2. Install new piston pin clips and make sure they are fully seated in their grooves.

### NOTE:

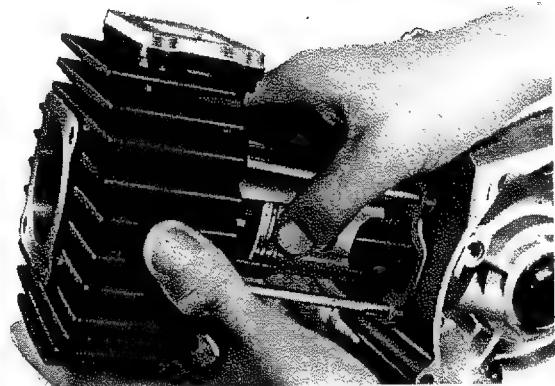
Take care during installation to avoid damaging the piston skirts against the crankcase as the cylinder is installed. Note the two induction holes in the piston skirt. These must be to the rear during installation.

## Cylinder

1. Install a new cylinder base gasket.
2. Install cylinder with one hand while compressing piston rings with other hand.

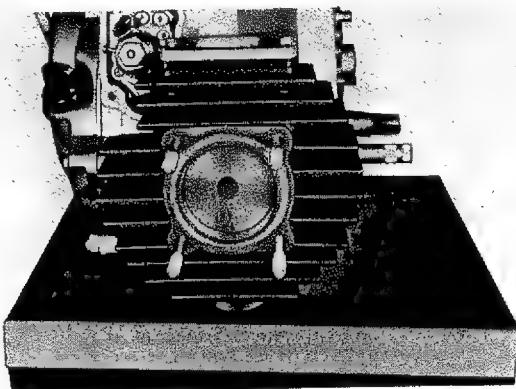
### NOTE:

Make sure the rings are properly positioned.



## Cylinder head

Install cylinder head gasket and cylinder head.

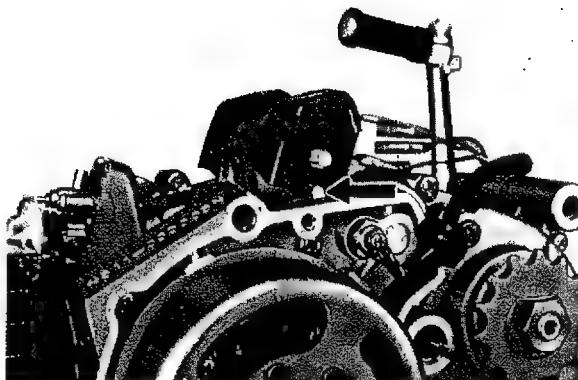


## INSTALLING ENGINE

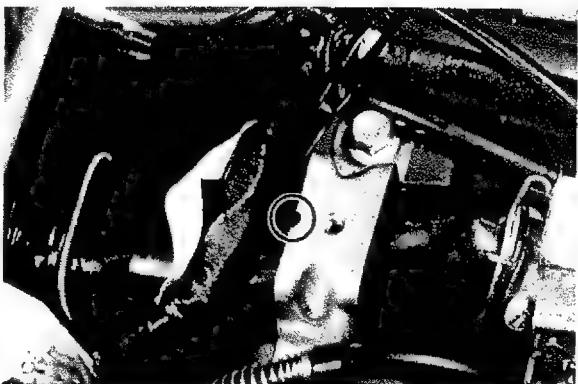
Mount the engine in the frame as follows:

1. Install the engine bracket. Fit the cut on the left side of the bracket over the projection of crankcase, and secure with bolts.
2. Install three engine mounting bolts with proper tightening torque.

**Tightening torque:**  
18 Nm (1.8 m · kg)



3. Install the under cover stay with the round cut on the rear side.



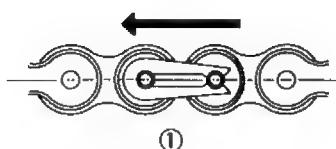
4. Install drive sprocket and chain.

**NOTE:**

Install chain joint in proper direction.

5. Tighten drive sprocket with proper torque.

**Drive sprocket nut torque:**  
55 Nm (5.5 m · kg)



1. Direction of travel

**6. Install the flywheel.**

**NOTE:**

When installing flywheel, make sure woodruff key is properly seated in keyway of crankshaft. Apply a light coating of lithium soap base grease to tapered portion of crankshaft end. Carefully install flywheel taking care to align for woodruff key. Install bevelled washer, lockwasher and locknut. Tighten carefully to recommended torque value.

Clean the magneto flywheel cam face, and grease it sparingly.



**Flywheel nut torque:**  
50 Nm (5.0 m · kg)

7. Whenever the flywheel is removed, ignition timing must be re-set.
8. Apply a light coat of molybdenum grease to the shifter rod end.
9. Install crankcase cover (left).
10. Install carburetor assembly and adjust.
11. Install muffler.
12. Install oil pump wire and adjust.

## CHAPTER 4. CARBURETION

<b>AIR CLEANER.....</b>	<b>88</b>
Description.....	88
<b>CARBURETOR.....</b>	<b>89</b>
Description.....	90
Disassembly.....	90
Troubleshooting and repair.....	91
Disassembling the mixing chamber.....	94
Reassembly and installation.....	95
<b>REED VALVE ASSEMBLY .....</b>	<b>96</b>
Description.....	96
Removal and assembly.....	97
Insulator .....	98

4

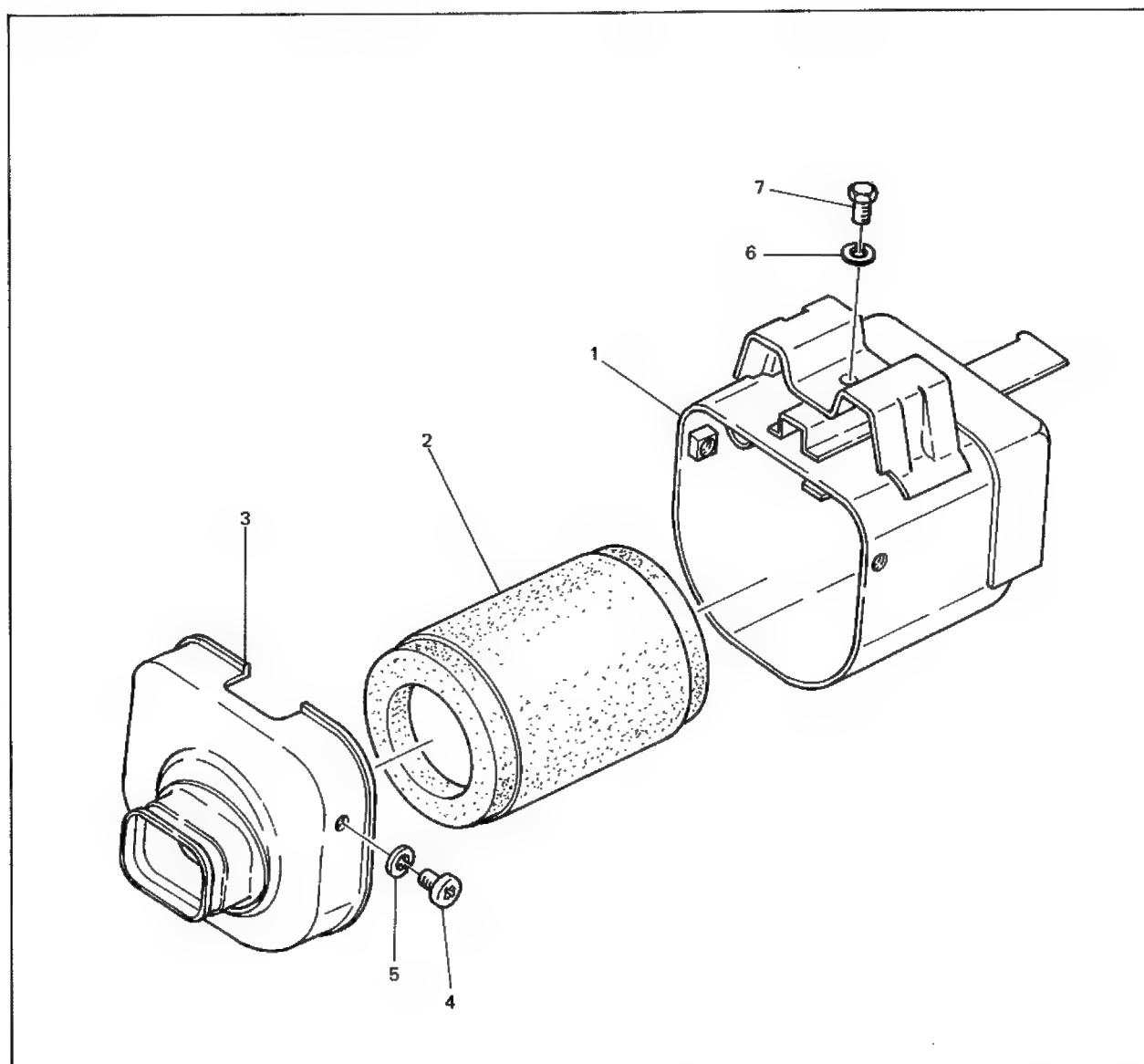
4

## CHAPTER 4. CARBURETION

### AIR CLEANER

#### Description

1. The air filter is housed within a case below the oil tank.
2. The filter is made of polyurethane foam with a stiff bristle covering.
3. For proper function of carburetion, the filter must be in place; must be clean; and must be damp with oil to provide adequate protection to vital engine parts.
4. For air filter maintenance see Chapter 2.

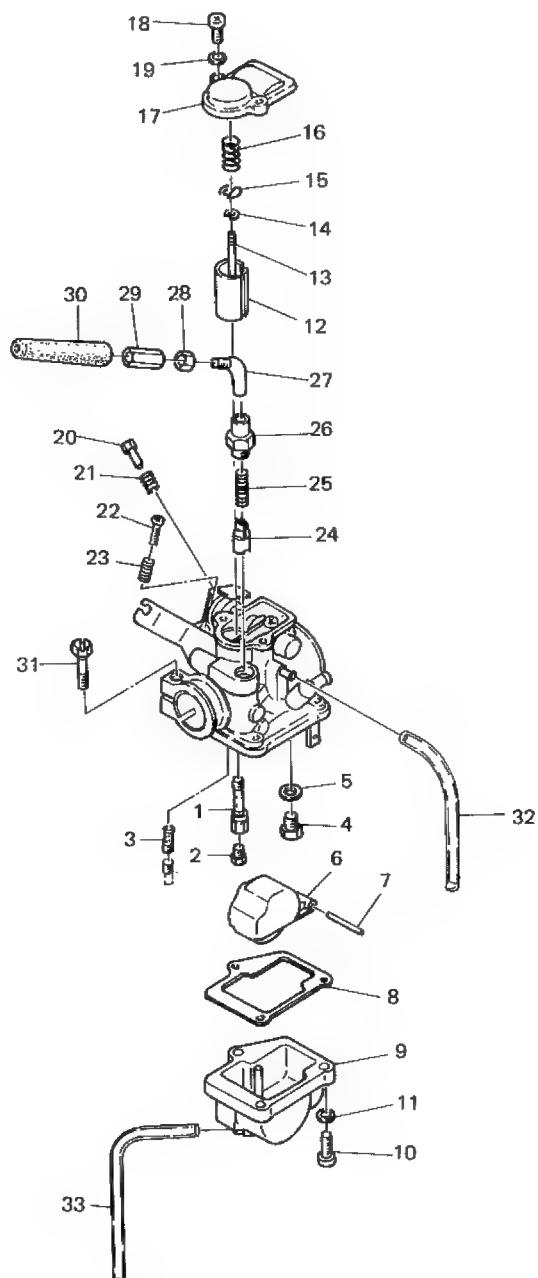


1. Air cleaner case  
2. Air cleaner element  
3. Air cleaner cap

4. Pan head screw  
5. Spring washer

6. Spring washer  
7. Bolt

## CARBURETOR



1. Main nozzle	10. Pan head screw	18. Pan head screw	26. Plunger cap
2. Main jet	11. Spring washer	19. Spring washer	27. Cable guide
3. Pilot jet	12. Throttle valve	20. Air adjusting screw	28. Adjusting nut
4. Valve seat	13. Needle	21. Air adjusting spring	29. Adjusting screw
5. Valve seat washer	14. Clip	22. Throttle adjusting screw	30. Cable cap
6. Float	15. Spring seat	23. Throttle adjusting spring	31. Screw
7. Float pin	16. Throttle spring	24. Starter plunger	32. Air vent pipe
8. Float chamber gasket	17. Mixing chamber top	25. Plunger spring	33. Over flow pipe
9. Float chamber body			

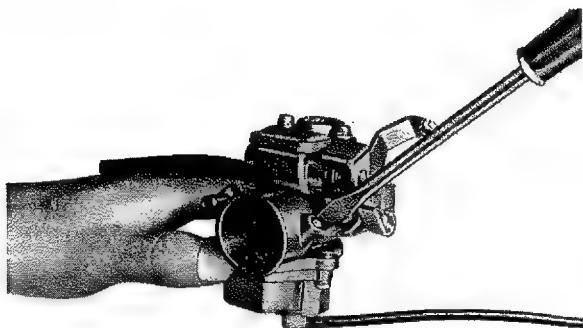
## Description

1. The carburetor is of primary concern to proper engine operation. Considerable care should be taken during disassembly, inspection, and maintenance to see that all circuits are working correctly and that all adjustments properly made.

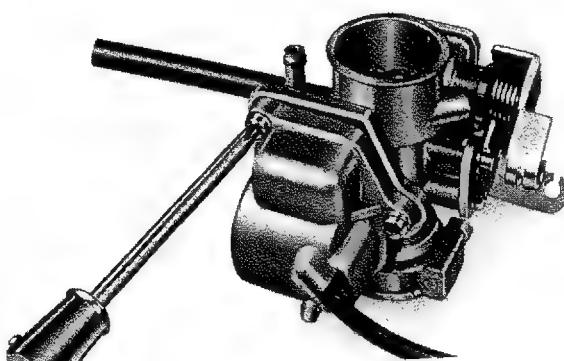
2. Prior to carburetor disassembly, study the sections on air filter, spark plug, Autolube and ignition timing thoroughly. Each of these components works in conjunction with the carburetor to provide maximum performance and longevity.

## Disassembly

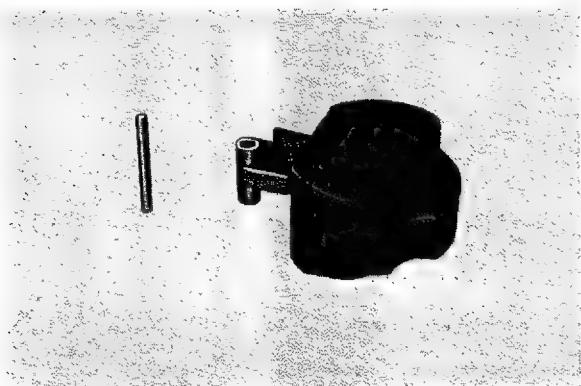
Remove the following parts as shown.



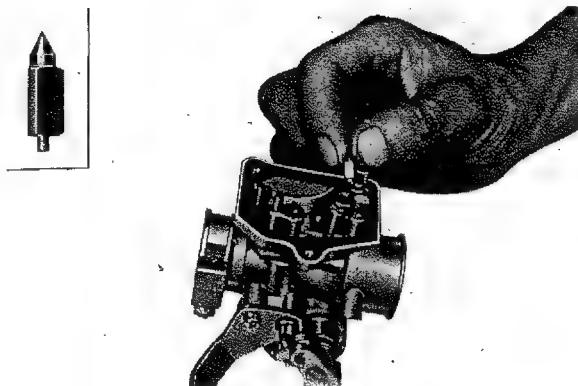
Pilot air screw



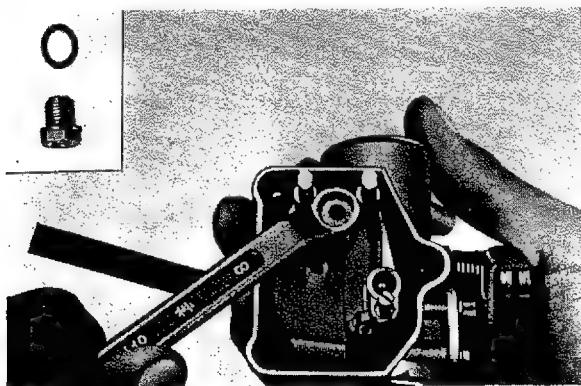
Float chamber



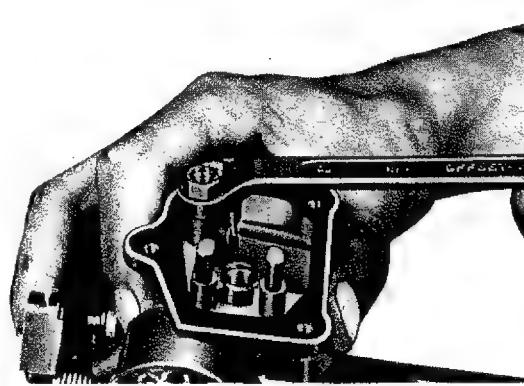
Float



Needle valve



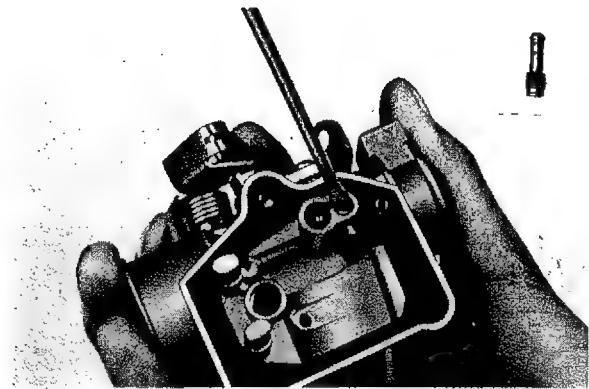
Valve seat



Main nozzle



Main nozzle



Pilot jet

**NOTE:**

1. Banjo bolt holding main jet can be removed without any disassembly.
2. Carefully set body aside and inspect each independent float within the float bowl cavity. Note their installation position. The float arm pin must be at the bottom of the float bowl and pointed in, toward the center.
3. Wash the carburetor in petroleum base solvent. Wash all associated parts.
4. It is rarely necessary to use special carburetor cleaning solutions, if deposits warrant this procedure, remove the Starter Jet Assembly to avoid damaging the neoprene valve seat.
5. Using high pressure air, blow out all passages and jet's.
6. Never direct high pressure air into carburetor with float bowl installed. Damage to floats may occur.
7. Inspect the needle and seat for signs of excessive wear or attached foreign particles. Replace as required. Always replace inlet needle and inlet valve seat as an assembly.
8. Inspect pilot air screw for signs of excessive wear or attached foreign particles. Replace as required.

**Troubleshooting and repair**

Carburetor Specifications			
Part Name	Abbrev.	Model	
		LB50 II AC	LB80IIAC
Manufacturer - Model	—	Mikuni VM14SC	Mikuni VM16/1
I.D. Number	—	2T5-00	1F5-01
Venturi Size	—	14 mm	16 mm
Main Jet	M.J.	#95	←
Needle Jet	N.J.	E-4	E-8
Jet Needle/Clip Position	J.N.	3G9/3	←
Cut Away	C.A.	2.5	←
Pilot Jet	P.J.	#17.5	#15
Air Jet	A.J.	Drill 2.5φ	←
Starter Jet	S.J.	#20	#25
Air Screw (Turns Out)	A.S.	1	1-3/4
Idle Speed	—	1,350 ± 100 rpm	←
Float Level	F.L.	22.0 ± 2.5 mm	←

## **NOTE:**

Cylinder porting, combustion chamber compression, ignition timing, muffler design, and carburetor size and component selection are all balanced to achieve optimum performance. However, variations in temperature, humidity and altitude, to name a few, will affect carburetion and consequently, engine performance.

The following list gives each of the major components of the carburetor that can be readily changed in order to modify carburetor performance if required.

### **1. Pilot air screw**

Controls the ratio of air to fuel in the idle circuit. Turning the screw in decreases the air supply giving a richer mixture.  
**OPERATING RANGE MOST AFFECTED BY THIS ADJUSTMENT: ZERO TO 1/8 THROTTLE.**

### **2. Pilot jet**

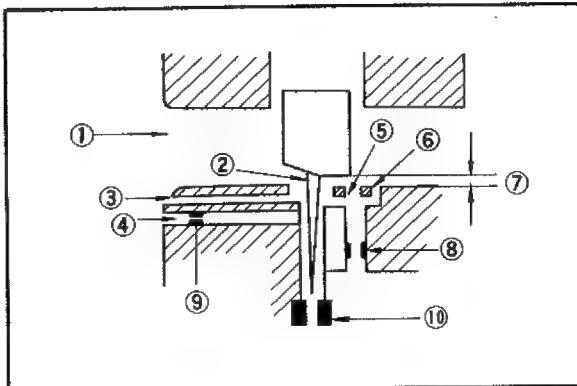
Controls the ratio of fuel to air in the idle circuit. Changing the jet to one with a higher number supplies more fuel to the circuit giving a richer mixture.

**OPERATING RANGE MOST AFFECTED BY THIS JET: ZERO TO 1/8 THROTTLE.**

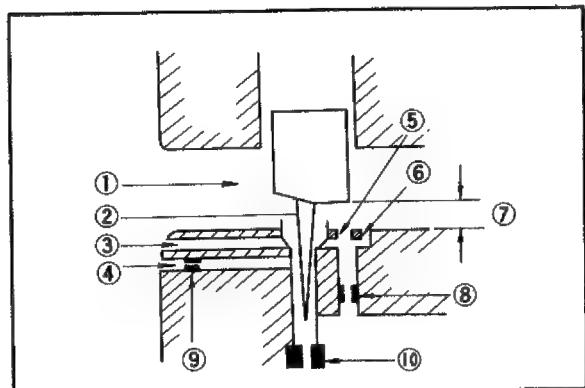
### **3. Throttle valve (slide):**

The throttle valve (slide) has a portion of the base cutaway to control air flowing over the main nozzle. A wider angle (more "cutaway") will create a leaner mixture. Throttle valves are numbered according to the angle of the cutaway. The higher the number, the more cutaway, the leaner the mixture.

**OPERATING RANGE MOST AFFECTED BY THE THROTTLE VALVE: 1/8 TO 1/4 THROTTLE.**



1. Main air	6. Pilot outlet
2. Jet needle	7. Opening 0 to 1/8 throttle
3. Pilot air	8. Pilot jet
4. Bleed air	9. Air jet
5. Bypass	10. Main jet

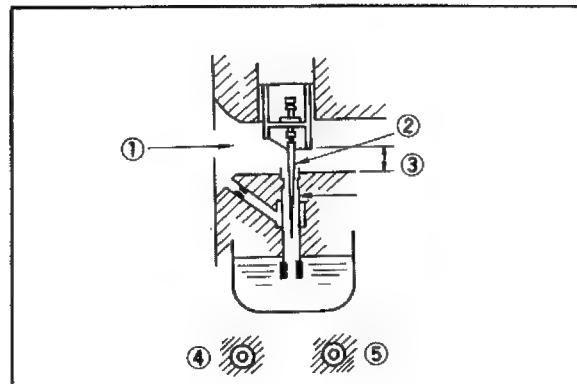


1. Main air	6. Pilot outlet
2. Jet needle	7. Opening 1/8 to 1/4
3. Pilot air	8. Pilot jet
4. Bleed air	9. Air jet
5. Bypass	10. Main jet

#### 4. Jet needle

The jet needle is fitted within the throttle valve. The tapered end of the needle fits into the main nozzle outlet. Raising the needle allows more fuel to flow out of the nozzle outlet giving a richer mixture. There are five circlip grooves at the top of the needle. Moving the needle clip from the first, or top groove, through the fifth, or bottom groove, will give a correspondingly richer mixture.

**OPERATING RANGE MOST AFFECTED BY THE JET NEEDLE: 1/4 TO 3/4 THROTTLE.**

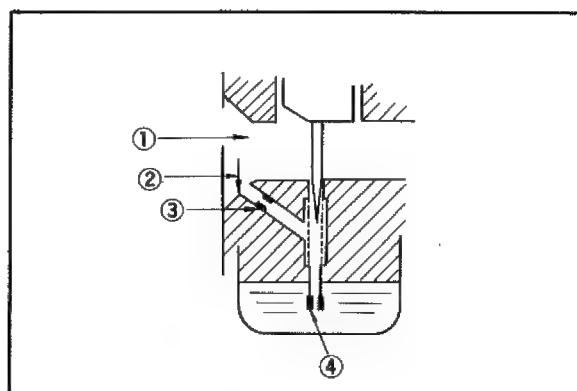


- 1. Main air
- 2. Jet needle
- 3. Opening 1/4 to 3/4
- 4. 3/4 throttle
- 5. 1/4 throttle

#### 5. Main jet

The main jet controls overall fuel flow through the main nozzle. Changing the jet to one with a higher number supplies more fuel to the main nozzle giving a richer mixture.

**OPERATING RANGE MOST AFFECTED BY THE MAIN JET: 3/4 TO FULL THROTTLE.**



- 1. Main air
- 2. Bleed air
- 3. Air jet
- 4. Main jet

#### NOTE:

Excessive changes in main jet size can affect overall performance.

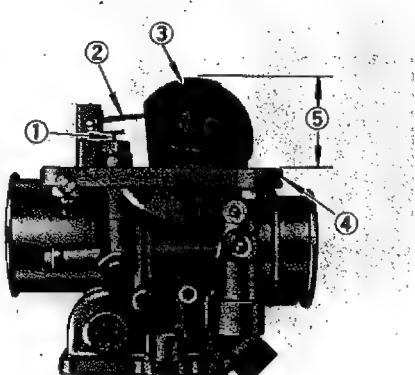
#### CAUTION:

**The fuel/air mixture ratio is a governing factor upon engine operating temperature.**

**Any carburetor changes, whatsoever, must be followed by a thorough test of spark plug temperature during actual engine operation.**

#### 6. Float level

- a. Float level is one factor within the carburetor which will change with use.
- b. If float level within the carburetor float chamber body decreases, the fuel/air mixture ratio will be leaner. If the level increases, mixture will be richer.



- 1. Needle
- 2. Float holding plate
- 3. Float
- 4. Edge of mixing chamber
- 5. Float lever

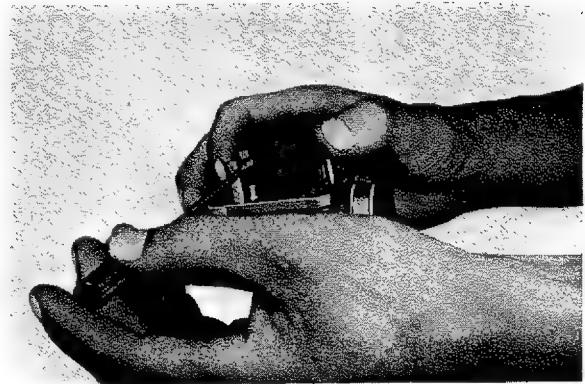
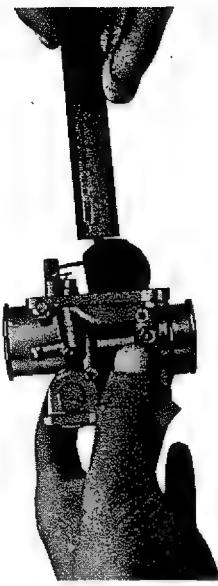
- c. The level is set according to the design of the carburetor and float bowl chamber. Under no circumstances should float level be altered in an attempt to correct a performance problem. Look for the problem in other, related components or carburetor circuits.
- d. If the carburetor is placed with the side down, the float arm will contact the float valve end.
- e. Using a vernier caliper, measure the distance of the float arm from the top of the float chamber gasket seat (gasket removed) to the float arm.

**Float level:**  
 $22.0 \pm 2.5 \text{ mm}$

**NOTE:**—

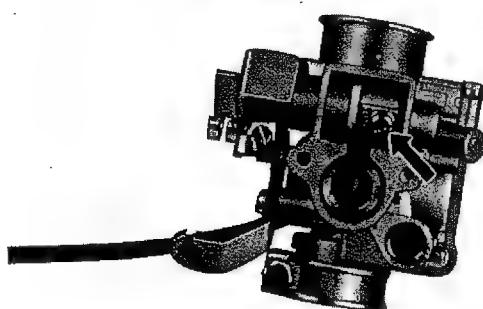
The float arm should be just resting on, but not depressing, the spring loaded inlet needle.

- f. To correct float arm height, bend the tang a slight amount as required. Both the right and left sides of the float arm should measure identically. Correct as required.

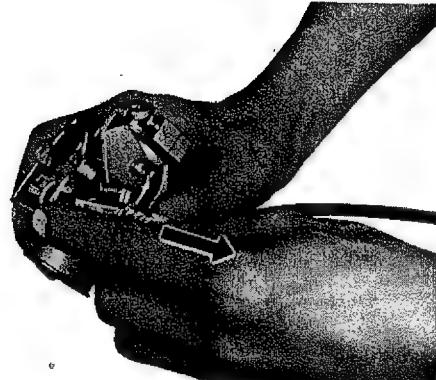


#### Disassembling the mixing chamber

1. Remove the mixing chamber top, and remove the throttle shaft bolt.



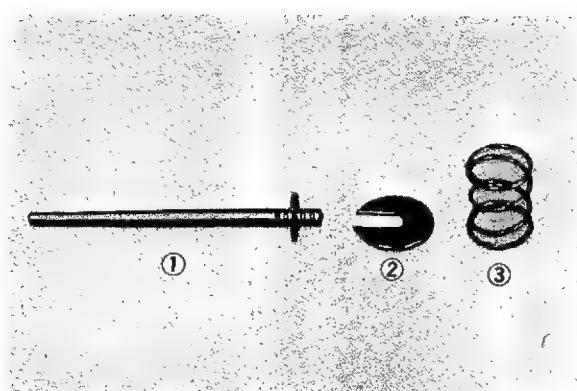
2. Pull out the throttle shaft.



3. Pull out the throttle valve arm pin, and the throttle valve can be removed together with the bushing.



4. Note that the jet needle is held down by the spring and plate.



1. Jet needle  
2. Plate  
3. Spring

#### Reassembly and installation

1. Install the float bowl and main jet banjo bolt.
2. Moving to machine, push needle out of seat in throttle valve (slide). Inspect for signs of bending scratches or wear. Replace as required.
3. Check needle clip position.  
Clip position is counted starting with the first clip groove at the top of the needle.

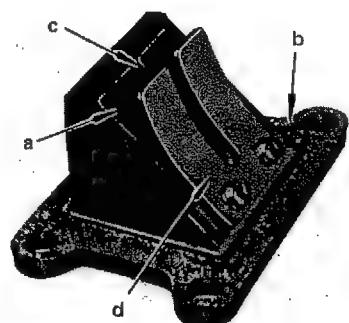
Jet needle type:	3G9/3
Clip position:	3

4. Check throttle valve (slide) for signs of wear. Insert into carburetor body and check for free movement. If slide, or body, is out of round causing slide to stick, replace.
5. Install throttle valve, throttle valve opening and closing mechanism, and needle assembly in carburetor mixing chamber. Tighten mixing chamber top as tight as possible by hand.
6. Install the mixing chamber top cover and all overflow and vent tubes. Re-install carburetor.  
Check position and routing of all tubes. Check tightness of all fittings. Make sure carburetor is mounted in a level position.
7. After installation, re-adjust throttle cable and Autolube pump cable per directions in Chapter 2.

## REED VALVE ASSEMBLY

### Description

1. Yamaha has designed a unique stainless steel reed valve located between the carburetor and cylinder. The valve works independently on a demand basis. There's no mechanical device, such as a rotary valve or piston skirt to govern its opening and closing.
2. Construction of reed valve assembly.
  - a. Valve  
The valve is made of special flexible stainless steel and designed to open and close the inlet port.
  - b. Case  
The case is made of a die-cast aluminum alloy.
  - c. Gasket  
Made of heat and oil-resisting rubber, the gasket is "welded" to the case by heat.
  - d. Valve stopper  
The valve stopper is made of highly-durable cold-rolled stainless steel plate, and controls the movement of the valve.



**3. Handling the reed valve**

a. As explained earlier, the reed valve is operated by changes in crankcase pressure and by the inertia effect of the fuel-air stream. It is a high-precision piece, and therefore, it must be handled with special care.

**4. Storage**

a. The reed valve must be stored in a clean and dry place and must not be exposed to the sun. Particularly, it must be kept free from salt. Avoid touching the valve.

**Removal and assembly**

With carburetor removed, proceed as follows:

1. Remove the bolts (4) holding the intake manifold and reed valve assembly to cylinder.

Remove assembly.

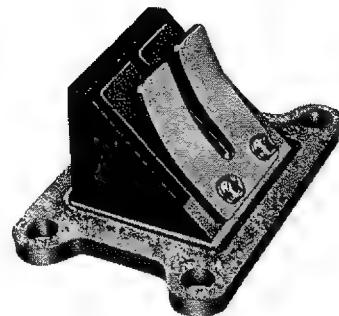
2. Inspect reed petals for signs of fatigue cracks. Reed petals should fit flush or nearly flush against neoprene seats. If in doubt as to sealing ability, apply suction to carburetor side of assembly. Leakage should be slight to moderate.

3. If disassembly of the reed valve assembly is required, proceed as follows:

a. Remove Phillips screws (2) securing stopper plate and reed to reed block. Handle reed carefully. Avoid scratches and do not bend.

Note from which side of the reed block the reed and stopper plate were removed. Re-install on same side.

b. During reassembly, clean reed block, reed, and stopper plate thoroughly. Apply a holding agent, such as "Lock-Tite", to threads of Phillips screws. Tighten each screw gradually to avoid warping.

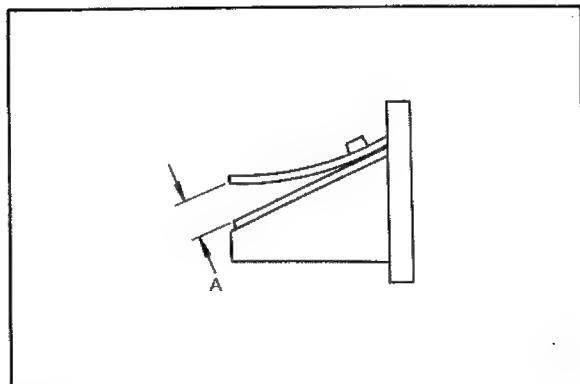


c. Valve stopper

The valve stopper controls the movement of the valve.

Check clearance "A".

Standard value:  
6.8 ~ 7.2 mm

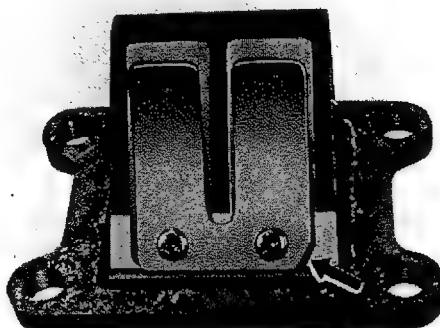


A = 6.8 ~ 7.2 mm

**NOTE:**

During reassembly, note the cut in the lower corner of the reed and stopper plate. Use as aid to direction of reed installation.

4. During reassembly of the reed valve assembly and manifold, install new gaskets and torque the securing bolts gradually and in pattern. Tighten thoroughly.



**Insulator**

Check the insulator mating surfaces for warpage. If any warpage is evident, place sandpaper (#60) on a surface plate, and rub the mating surface against it in a "circle eight movement" with continuous rotation.



# CHAPTER 5. CHASSIS

<b>FRONT WHEEL .....</b>	101
Removal .....	101
Front axle .....	102
Checking the brake lining thickness.....	102
Brake drum .....	103
Replacing wheel bearings .....	103
Installing front wheel .....	103
<b>REAR WHEEL .....</b>	105
Removal .....	105
Checking the brake lining thickness.....	105
Brake drum .....	105
Replacing wheel bearings .....	105
Installing rear wheel.....	105
<b>FRONT AND REAR WHEELS .....</b>	105
<b>TIRES AND TUBES .....</b>	107
Removal .....	107
Installation .....	107
<b>DRIVE CHAIN AND SPROCKETS .....</b>	108
Drive sprocket.....	108
Driven sprocket.....	109
Chain inspection .....	109
Chain maintenance .....	110
<b>FRONT FORKS .....</b>	111
Disassembly.....	111
Inspection.....	113
Assembly .....	113
<b>STEERING HEAD .....</b>	115
Adjustment .....	115
Disassembly.....	115
Inspection.....	117
Removal .....	117
Installation .....	118

<b>SWING ARM .....</b>	120
Swing arm inspection .....	120
Swing arm lubrication .....	120
Swing arm removal.....	120
<b>AUTO-COCK.....</b>	122
Advantages of the auto-cock.....	122
Construction .....	122
Position of the cock lever and fuel passages.....	123
Check lever position for travelling .....	124
Checking.....	124
<b>CABLES AND FITTINGS .....</b>	125
Cable maintenance.....	125
Throttle maintenance.....	127
Cable junction maintenance .....	127
<b>MISCELLANEOUS CHASSIS COMPONENTS .....</b>	128

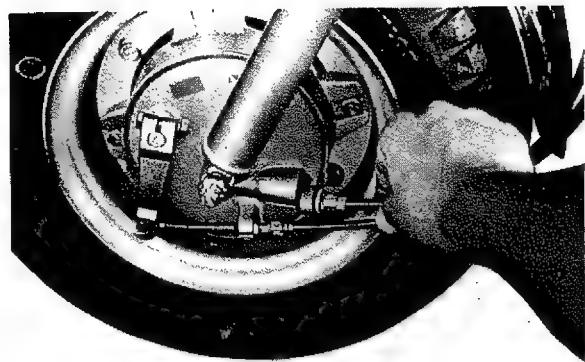


# CHAPTER 5. CHASSIS

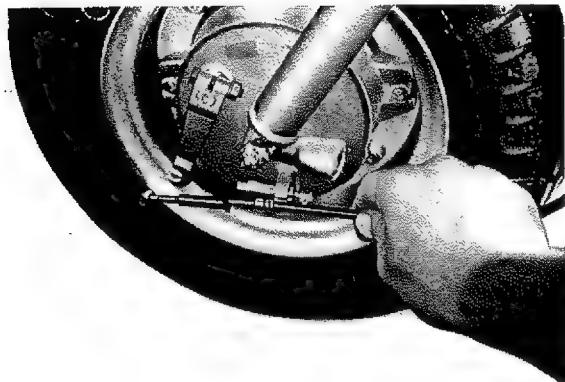
## FRONT WHEEL

### Removal

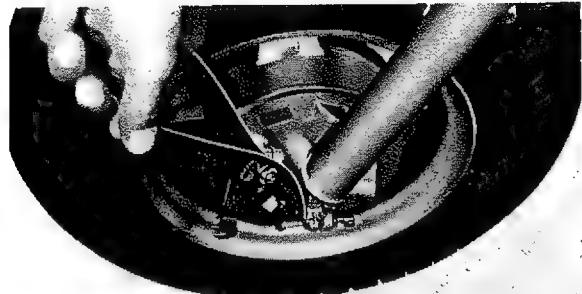
1. Disconnect the brake cable at the front wheel backing plate.



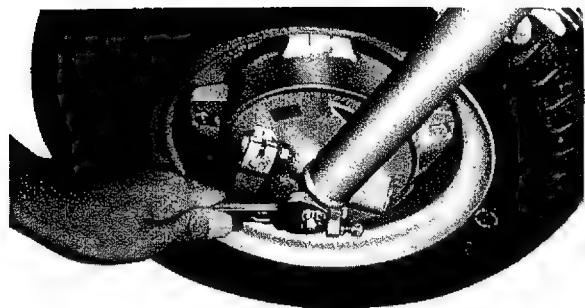
2. Disconnect the speedometer cable from the front wheel backing plate.



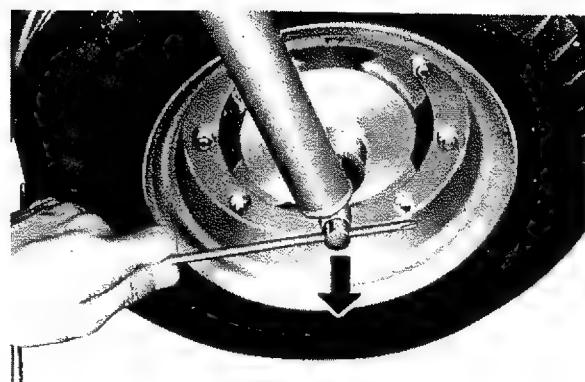
3. Remove cotter pin from front axle.



4. Remove the front axle nut.



5. Remove the front wheel axle by simultaneously twisting and pulling out on the axle. Then remove the wheel assembly.  
(Raise the front of the machine by placing a suitable stand under the engine.)



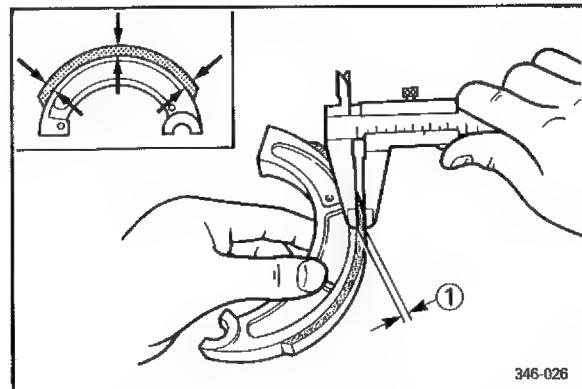
#### Front axle

Remove any corrosion from axle with emery cloth. Then place it on a surface plate and check for bending. If bent, replace.

#### Checking the brake lining thickness

1. Measure the brake lining thickness.

Front brake lining thickness:  
4 mm  
Replacement limit:  
2 mm

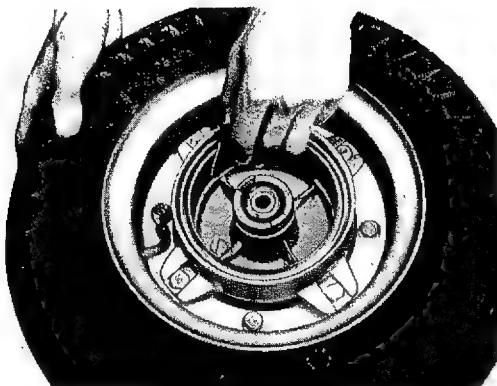


2. Remove any glazed areas from brake shoes using coarse sand paper.



### **Brake drum**

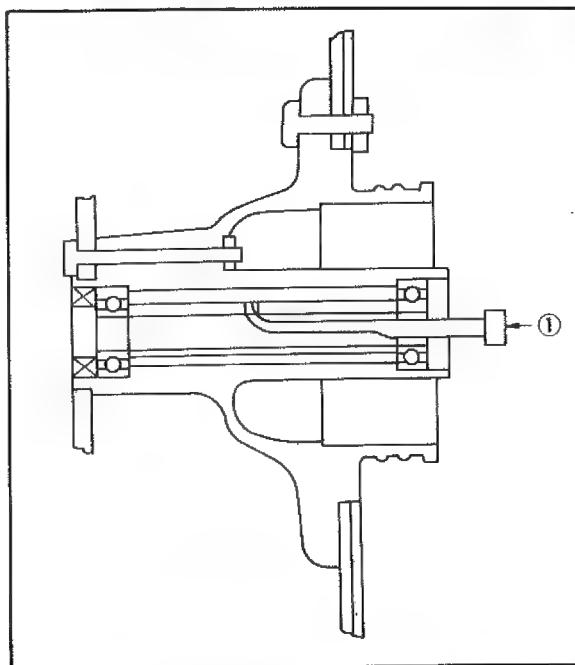
Oil or scratches on the inner surface or the brake drum will impair braking performance or result in abnormal noises. Remove oil by wiping with a rag soaked in lacquer thinner or solvent. Remove scratches by lightly and evenly polishing with emery cloth.



### **Replacing wheel bearings**

If the bearings allow play in the wheel hub or if wheel does not turn smoothly, replace the bearings as follows:

1. First clean the outside of the wheel hub.
2. Drive the bearing out by pushing the spacer aside (the spacer "floats" between the bearings) and tapping around the perimeter of the bearing inner race with a soft metal drift pin and hammer. Either or both bearings can be removed in this manner.
3. To install the wheel bearing, reverse the above sequence. Be sure to grease the bearing before installation. Use a socket that matches the outside race of the bearing as a tool to drive in the bearing.



1. Tap here

### **Installing front wheel**

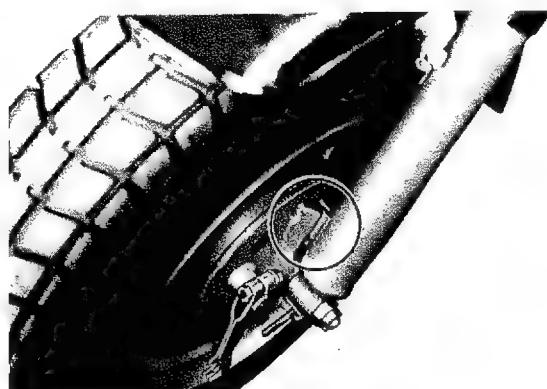
1. After replacing wheel and axle, tighten axle nut FIRST and install a new cotter pin.

#### **NOTE:**

Align the groove of the spacer and the surface of the holder.

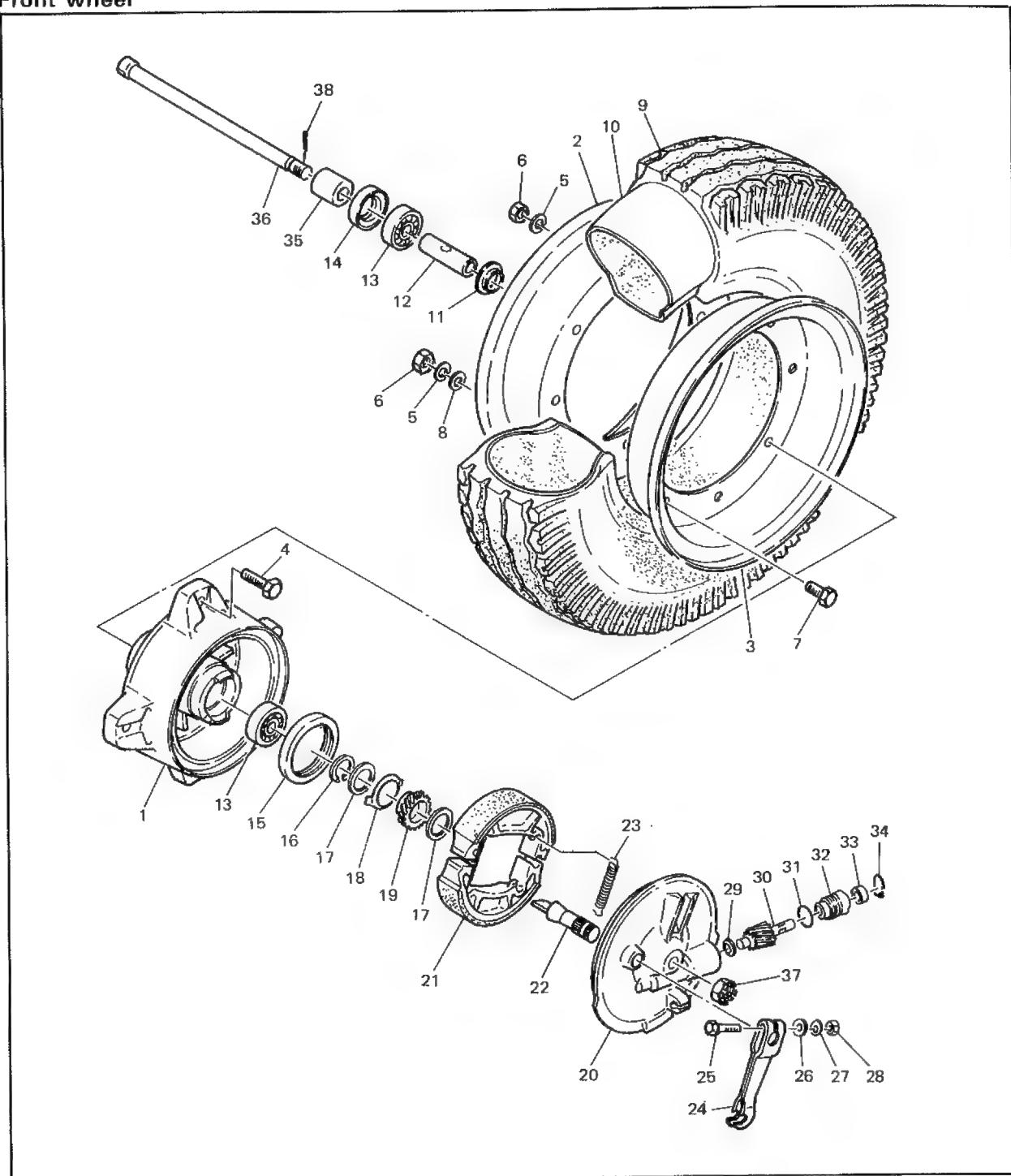
Position the brake shoe plate stopper groove over the matching metal projection on the front fork leg outer tube.

**Axle nut torque:**  
39 Nm (3.9 m · kg)



2. Connect front brake cable and speedometer cable.

## Front wheel

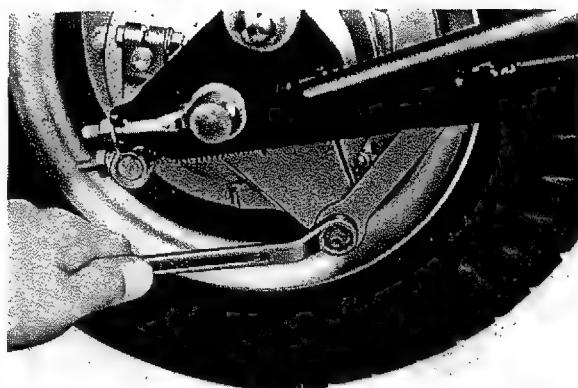


1. Hub	14. Oil seal	27. Spring washer
2. Wheel panel 1	15. Oil seal	28. Nut
3. Wheel panel 2	16. Circlip	29. Thrust washer
4. Bolt	17. Thrust washer	30. Meter gear
5. Spring washer	18. Meter clutch	31. O-ring
6. Nut	19. Driven gear (26T)	32. Bushing
7. Bolt	20. Brake shoe	33. Oil seal
8. Plain washer	21. Brake shoe complete	34. Stop ring
9. Tire (400-8-4PR)	22. Camshaft	35. Wheel shaft collar
10. Tube	23. Return spring	36. Wheel shaft
11. Spacer flange	24. Camshaft lever	37. Wheel shaft nut
12. Bearing spacer	25. Bolt	38. Cotter pin
13. Bearing	26. Plain washer	

## REAR WHEEL

### Removal

1. Remove the tension bar and brake rod from rear shoe plate.
2. Disconnect the drive chain.
3. Remove cotter pin from rear axle.
4. Remove the rear axle nut.
5. Pull out the rear axle by simultaneously twisting and pulling out.  
(For this step, elevate the wheel by placing a suitable stand under the engine.)
6. Remove the rear wheel assembly.



### Checking the brake lining thickness

See front wheel section.

Rear brake lining thickness:

4 mm

Replacement limit:

2 mm

### Brake drum

See front wheel section.

### Replacing wheel bearings

See front wheel section.

### Installing rear wheel

1. Install wheel and axle, and tighten axle nut. Install a new cotter pin.

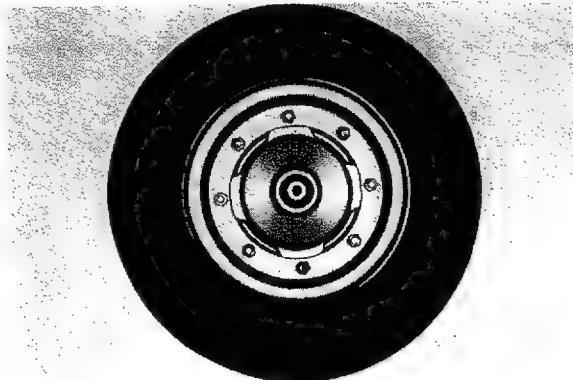
Axle nut torque:

60 Nm (6.0 m · kg)

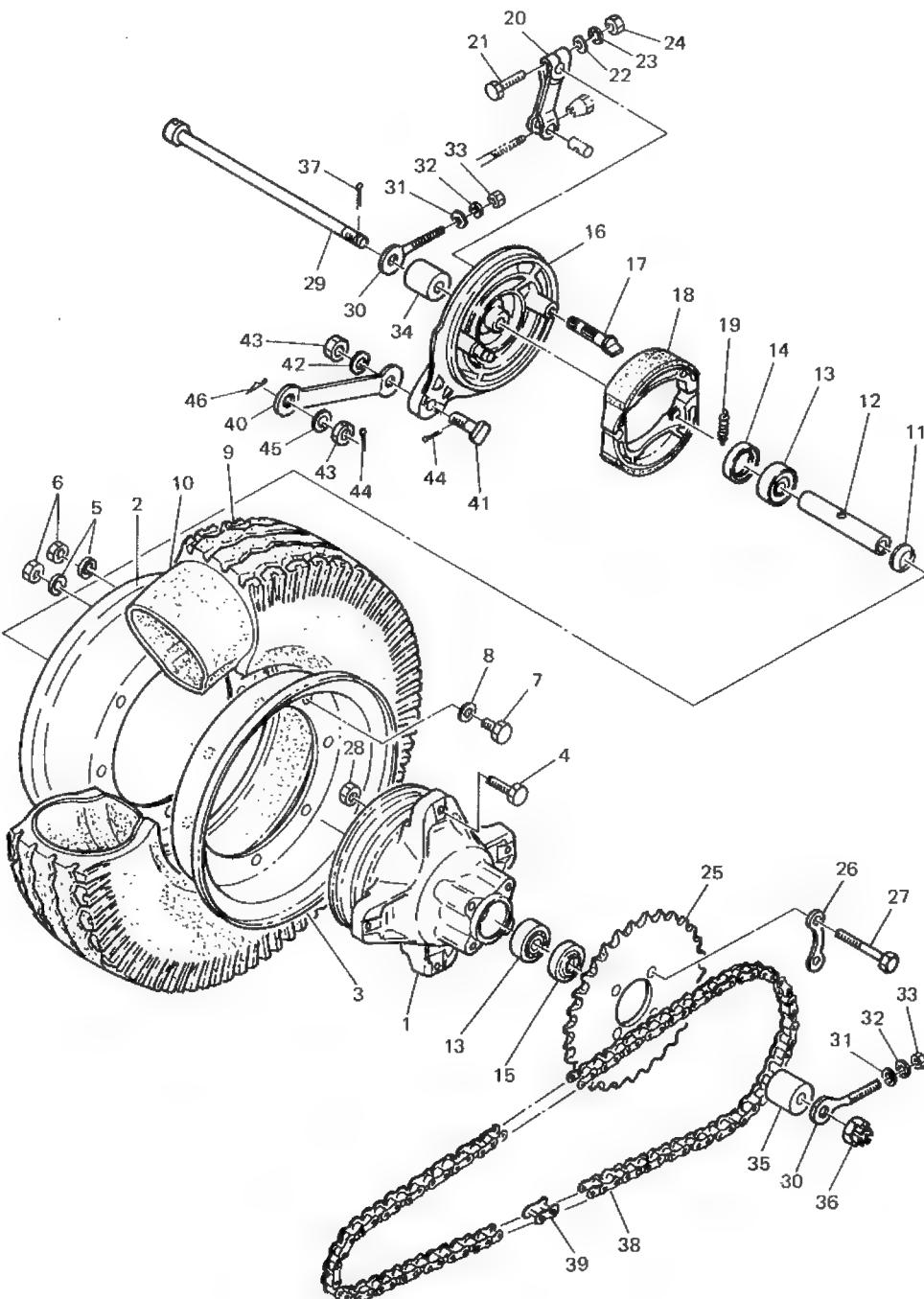
2. Connect drive chain, brake rod and tension bar.
3. Adjust drive chain. (See chapter 2)
4. Adjust rear brake. (See chapter 2)

## FRONT AND REAR WHEELS

To reduce the wheel weight and to facilitate the maintenance work, the disc type is in use. The wheel panels are put together with eight bolts to form the wheel rim.



## Rear wheel



1. Rear hub	13. Bearing	25. Sprocket wheel gear (21T)	37. Cotter pin
2. Wheel panel 1	14. Oil seal	26. Lock washer	38. Chain
3. Wheel panel 2	15. Oil seal	27. Fitting bolt	39. Chain joint
4. Bolt	16. Brake shoe plate	28. Nut	40. Tension bar
5. Spring washer	17. Camshaft	29. Wheel shaft	41. Tension bar bolt
6. Nut	18. Brake shoe complete	30. Chain puller	42. Spring washer
7. Bolt	19. Return spring	31. Plain washer	43. Nut
8. Plain washer	20. Camshaft lever	32. Spring washer	44. Cotter pin
9. Tire (400-8-4PR)	21. Bolt	33. Nut	45. Plain washer
10. Tube	22. Plain washer	34. Wheel shaft collar	46. Tension bar clip
11. Spacer flange	23. Spring washer	35. Shaft collar	
12. Bearing spacer	24. Nut	36. Shaft nut	

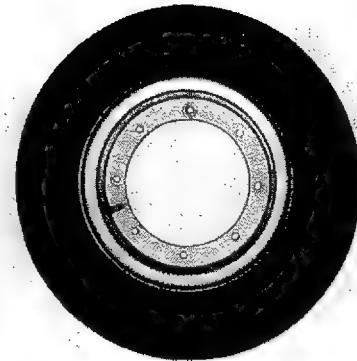
## TIRES AND TUBES

### Removal

1. Remove valve cap, valve core, and valve stem locknut.
2. When all air is out of tube, separate tire bead from rim, (both sides) by stepping on the tire wall with your foot.
3. Remove the eight bolts from the wheel panels, and they can be separated. Now the tire and tube can be removed easily.

### CAUTION:

**Before removing the bolts, be sure to deflate the tire. Otherwise, the panels will split with a snap.**



### Installation

When putting the tube in the tire, inflate it slightly and place it in the tire, then put the panels together.

### NOTE:

Because the wheel turns in one direction only, the tube must be installed so the valve stem forms a specific angle with the tire rim.

Finally, torque the eight bolts to specification and inflate tire to specified pressure.

Tightening torque: 15 Nm (1.5 m · kg)
--



### Front tire pressure (cold tire):

Model	LB50 II AC	LB80 II AC
<b>Basic weight: With oil and full fuel tank</b>	<b>80 kg</b>	<b>76 kg</b>
<b>Maximum load*:</b>	<b>140 kg</b>	<b>144 kg</b>
<b>Up to 150 kg load*</b>	<b>100 kPa (1.00 kg/cm<sup>2</sup>, 1.00 bar)</b>	<b>125 kPa (1.25 kg/cm<sup>2</sup>, 1.25 bar)</b>
<b>150 kg ~ maxi- mum load*</b>	<b>100 kPa (1.00 kg/cm<sup>2</sup>, 1.00 bar)</b>	<b>200 kPa (2.0 kg/cm<sup>2</sup>, 2.0 bar)</b>

### Rear tire pressure (cold tire):

Model	LB50 II AC	LB80 II AC
<b>Basic weight: With oil and full fuel tank</b>	<b>80 kg</b>	<b>76 kg</b>
<b>Maximum load*:</b>	<b>140 kg</b>	<b>144 kg</b>
<b>Up to 150 kg load*</b>	<b>125 kPa (1.25 kg/cm<sup>2</sup>, 1.25 bar)</b>	<b>125 kPa (1.25 kg/cm<sup>2</sup>, 1.25 bar)</b>
<b>150 kg ~ maxi- mum load*</b>	<b>200 kPa (2.0 kg/cm<sup>2</sup>, 2.0 bar)</b>	<b>150 kPa (1.5 kg/cm<sup>2</sup>, 1.5 bar)</b>

\* Load is the total weight of the cargo, rider, passenger and accessories.

## DRIVE CHAIN AND SPROCKETS

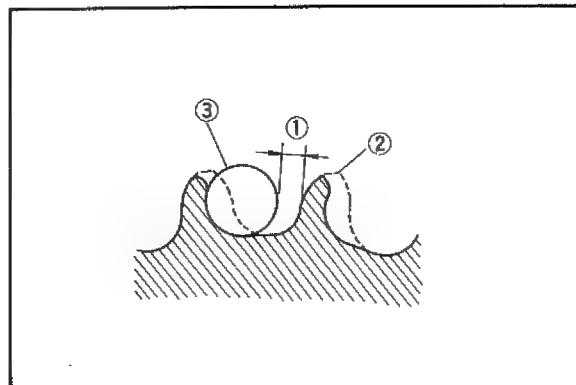
### NOTE:

Please refer to Maintenance Intervals and Lubrication Intervals charts for additional information.

### Drive sprocket

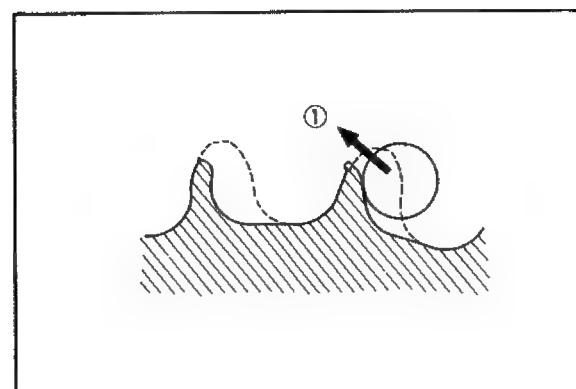
With the left crankcase cover removed, proceed as follows:

1. Using a blunt chisel, flatten the drive sprocket lock washer tab.
2. With the drive chain in place, transmission in gear, firmly apply the rear brake.  
Remove the sprocket securing nut.  
Remove the sprocket.
3. Check sprocket wear. Replace if wear decreases tooth width as shown.



1. Wear limit 3 mm (0.118 in)
2. Correct
3. Roller

4. Replace if tooth wear shows a pattern such as that in the illustration, or as precaution and common sense dictate.



1. Slip-off

5. During reassembly, make sure the lock washer splines are properly seated on the drive shaft splines. Tighten securing nut to specified torque value. Bend lock washer tab fully against securing nut flats.

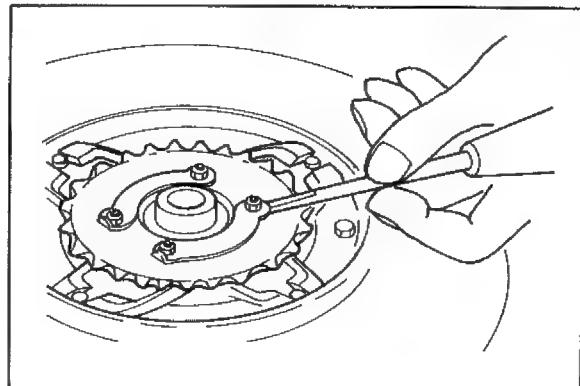
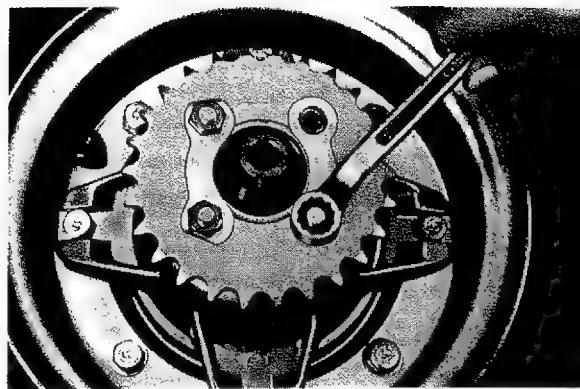
Drive sprocket securing nut torque:  
55 Nm (5.5 m · kg)

## Driven sprocket

With the rear wheel removed, proceed as follows:

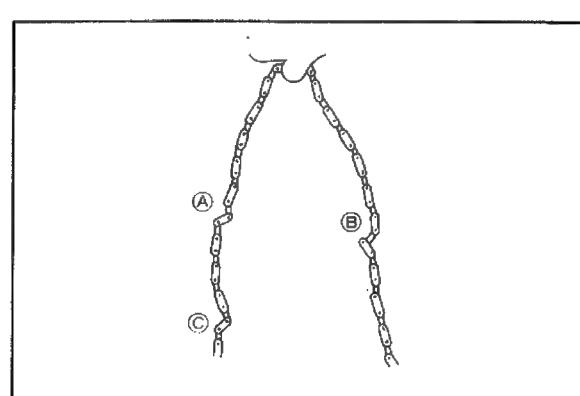
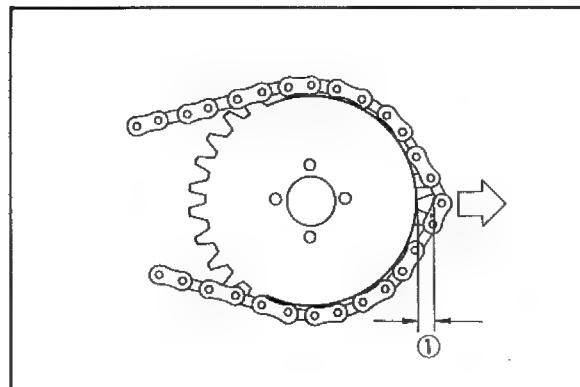
1. Using a blunt chisel, flatten the securing bolt lock washer tabs.  
Remove the securing bolts. Remove the lock washers and sprocket.
2. Check sprocket wear per procedures for the drive sprocket.
3. Check the sprocket to see that it runs true. If bent, replace.
4. During reassembly, make sure that sprocket and sprocket seat are clean. Tighten the securing bolts in a crisscross pattern.  
Bend the tabs of the lock washers fully against the securing bolt flats.

**Driven sprocket securing bolt torque:  
20 Nm (2.0 m · kg)**



## Chain inspection

1. With the chain installed on the machine, excessive wear may be roughly determined by attempting to pull the chain away from the rear sprocket. If the chain will lift away more than one-half the length of the sprocket teeth, remove and inspect.  
If any portion of the chain shows signs of damage, or if either sprocket shows signs of excessive wear; remove and inspect.
2. Check the chain for stiffness. Hold as illustrated. If stiff, soak in solvent solution, clean with wire brush, dry with high pressure air. Oil chain thoroughly and attempt to work out kinks. If still stiff, replace.
3. Check the side plate for damage. Check to see if excessive play exists in pins and rollers. Check for damaged rollers. Replace as required.



## Chain maintenance

The chain should be lubricated per the recommendations given in the Maintenance and Lubrication Intervals charts. More often if possible. Preferable after every use. See "Chassis and suspension, Swing arm", for additional information regarding chain guide.

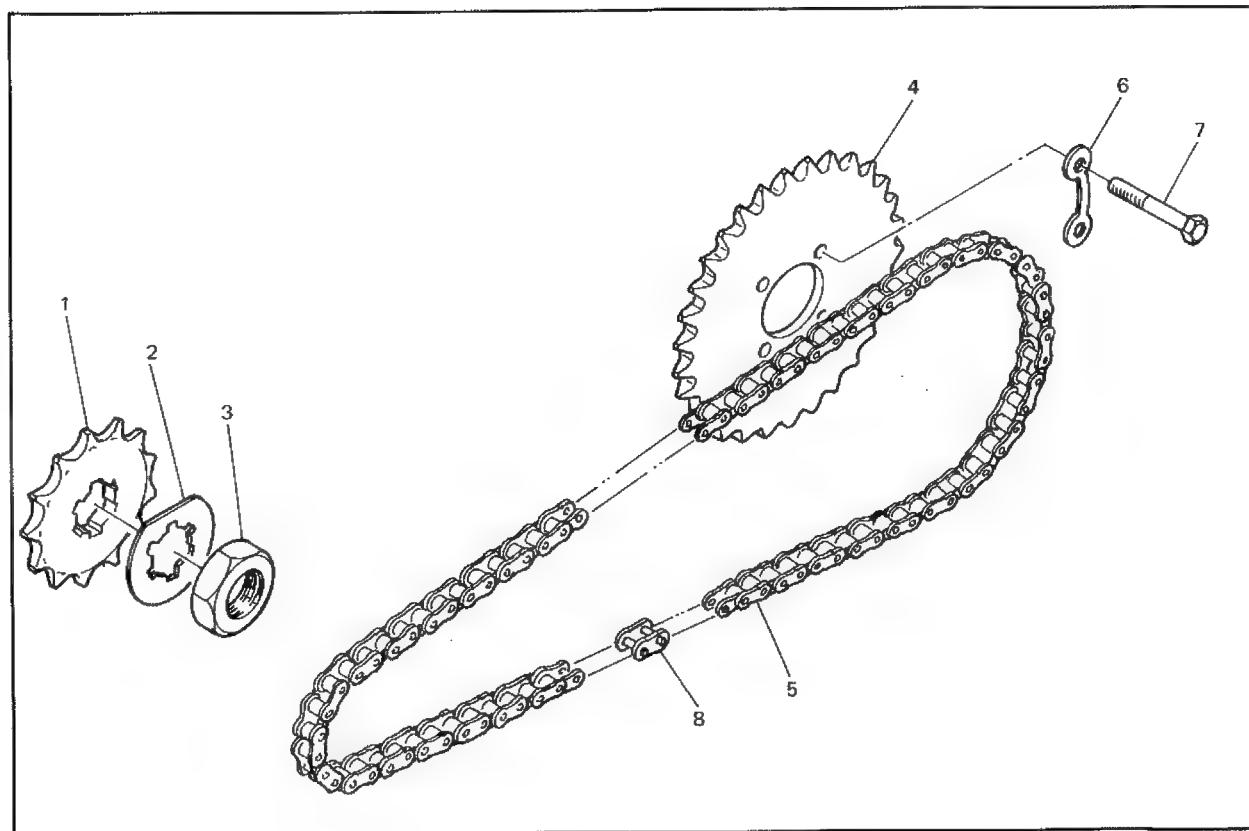
1. Wipe off dirt with shop rag. If accumulation is severe, use wire brush, then rag.
2. Apply lubricant between roller and side plates on both inside and outside of chain. Don't skip a portion as this will cause uneven wear. Apply thoroughly. Wipe off excess.

### NOTE:

Chain and lubricant should be at room temperature to assure penetration of lubricant into rollers.

Choice of lubricant is determined by use and terrain. SAE 20W or 30W oil may be used, but several specialty types by accessory manufacturers such as Yamaha chain and cable lube offer more penetration corrosion resistance for roller protection. In certain areas, semi-drying lubricants are preferable. These will resist picking up sand particles, dust, etc.

3. Periodically, remove the chain. Wipe and/or brush excess dirt off. Blow off with high pressure air.
4. Soak chain in solvent, brushing off remaining dirt. Dry with high pressure air. Lubricate thoroughly while off machine. Work each roller thoroughly to make sure lubricant penetrates. Wipe off excess. Reinstall.

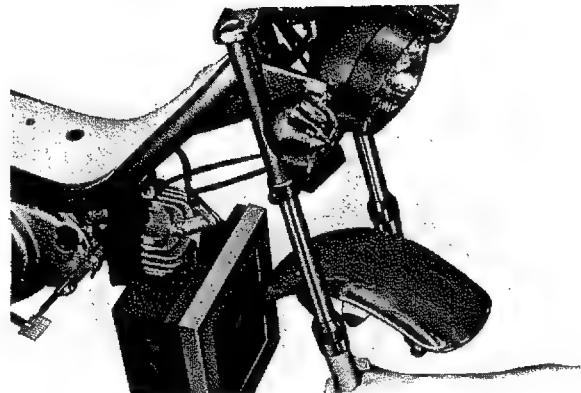


1. Drive sprocket
2. Lock washer
3. Locknut
4. Driven (rear) sprocket
5. Chain
6. Lock washer
7. Fitting bolt
8. Chain joint

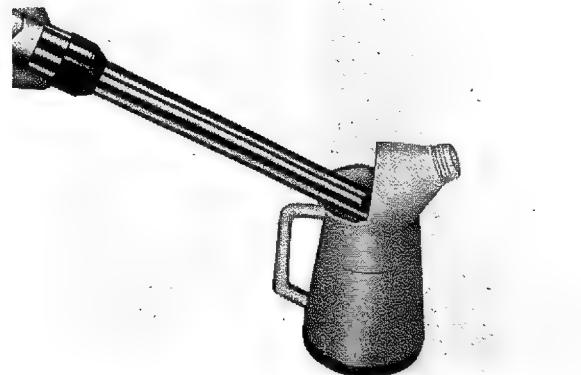
## FRONT FORKS

### Disassembly

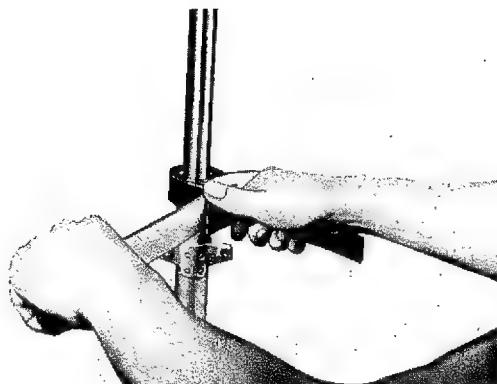
1. With the front wheel, speedometer cable and front brake cable removed, the fork legs can be removed from the upper and lower brackets by loosening upper and lower pinch bolts.



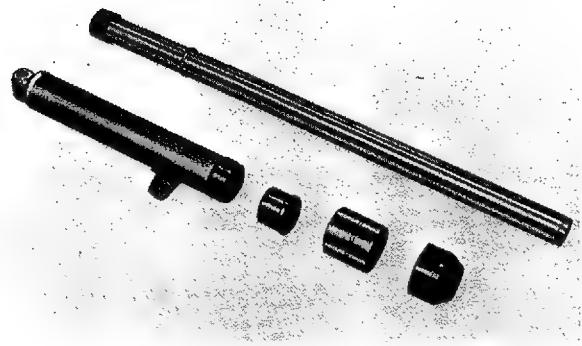
2. Remove the caps and drain the oil from both fork tubes.



3. Remove the outer tube nut from outer tubes.



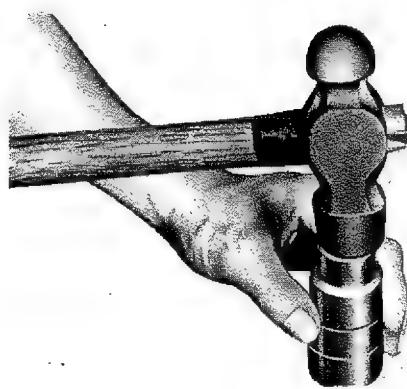
4. Remove slide metal and inner tube from outer tube.



5. Carefully pry out old seal without damageing fork tube.



6. Insert new seal with "open" side down using large socket and soft hammer.



## Inspection

Inspect the inner tube for bends or scratches. If the bend is slight, it can be corrected with a press. It is recommended, however, to replace the tube.

Check the slide metal and piston for wear. If excessively worn, replace them.

## Assembly

- When assembling the front fork, reverse the order of disassembly.

**NOTE:**

When installing the outer nut into the inner tube, cover the inner tube top end with a vinyl sheet to protect the oil seal lip against damage.

- Installing the front forks.
  - Bring up the front fork to the correct position and partially tighten the underbracket mounting bolt.
  - Pour specified amount of oil into the inner tube through the upper end opening. Use 10W/30 "SE" motor oil.

**NOTE:**

Specialty type fork oils of quality manufacture such as Yamaha Fork Oil should be used if available.



**Fork oil capacity:**

L.H.: 96 cm<sup>3</sup>  
R.H.: 120 cm<sup>3</sup>

- Install the inner tube caps.

**Inner tube cap torque:**

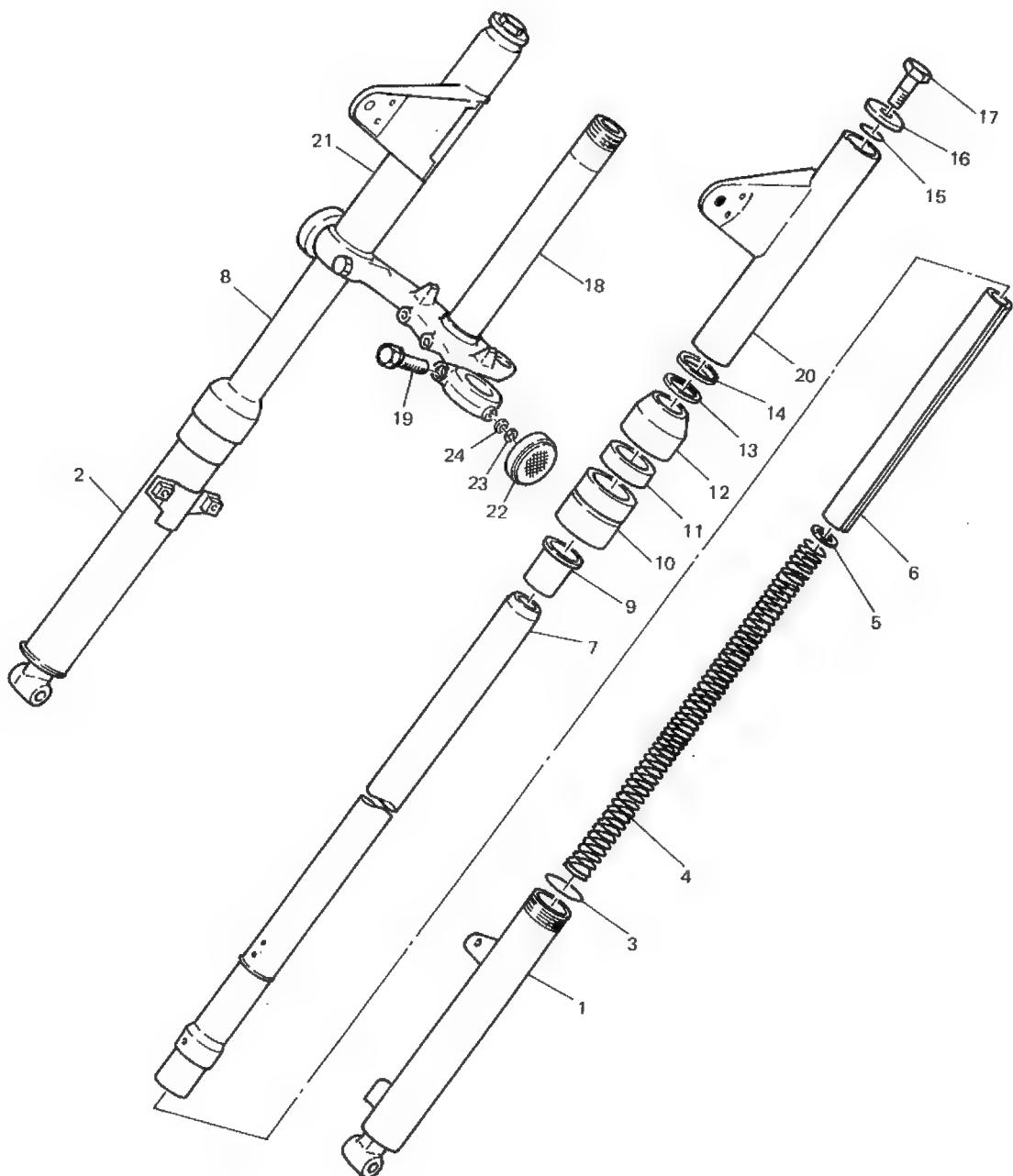
20 Nm (2.0 m • kg)

- Tighten underbracket pinch bolts.

**Pinch bolt torque:**

30 Nm (3.0 m • kg)

## Front fork



1. Outer tube (left)	13. Packing
2. Outer tube (right)	14. Guide bar
3. O-ring	15. O-ring
4. Spring	16. Cap washer
5. Washer	17. Bolt
6. Spacer	18. Underbracket complete
7. Inner tube complete (left)	19. Bolt
8. Inner tube complete (right)	20. Upper cover (left)
9. Slide metal	21. Upper cover (right)
10. Outer nut complete	22. Reflector
11. Oil seal	23. Spring washer
12. Dust seal	24. Plain washer

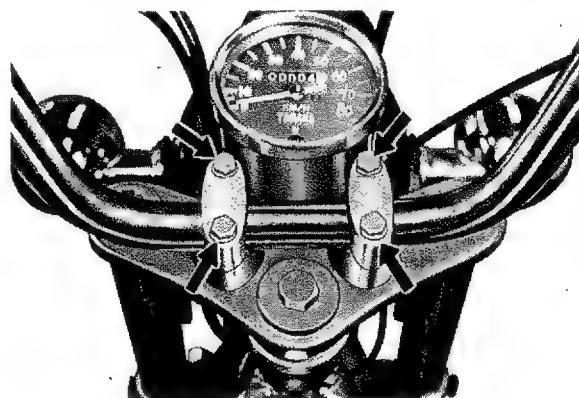
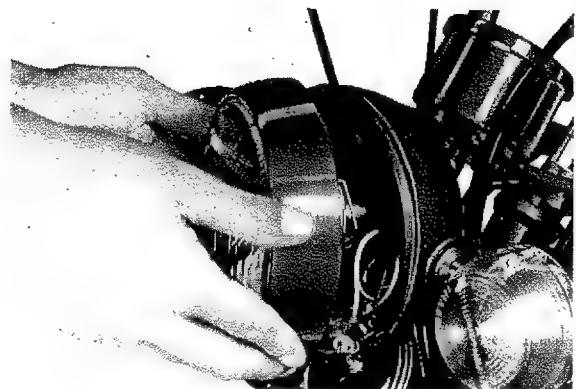
## STEERING HEAD

### Adjustment

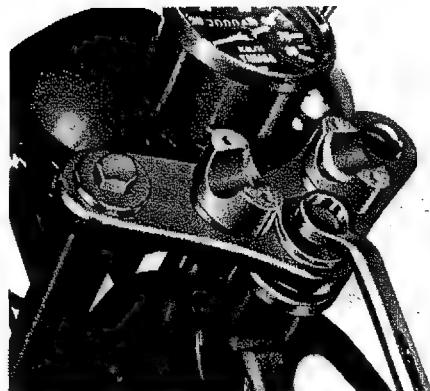
Refer to Chapter 2 for steering head adjustment procedure.

### Disassembly

1. After removing front forks, remove headlight from headlight body.
2. Disconnect electrical wires between headlight body and main wiring harness from frame.
3. Disconnect any electrical wires between handlebar switches and main wiring harness in headlight body.
4. Disconnect throttle cables, front and rear brake at handlebars.
5. Disconnect speedometer cables at instruments.
6. Remove handlebars and put aside.



7. Remove stem fitting bolt and crown washer.



8. Remove handle crown (upper bracket) and instruments, as an assembly.

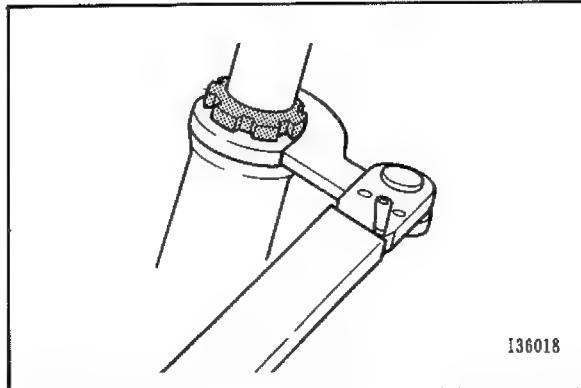
**NOTE:**

Hold headlight body to keep it from falling.

9. Remove steering ring nut with steering nut wrench.

**NOTE:**

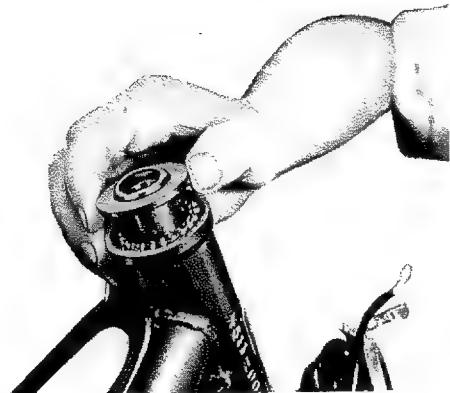
Support under-bracket with one hand to hold the bracket up into the headstock so that the loose bearings will not fall out.



I36018

10. While still supporting the under bracket, carefully lift off the upper bearing cover.
11. Lift off the top bearing race and remove all of the ball bearings from the upper bearing assembly.

Ball quantity/size: 22 pcs, 3/16 in



12. Remove bracket while being very careful not to lose any bearings from the lower assembly.

Ball quantity/size: 19 pcs, 1/4 in

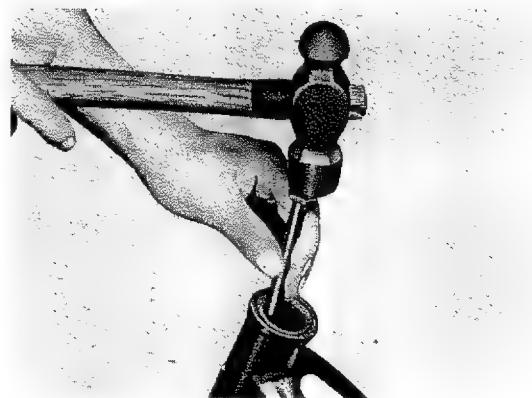


## **Inspection**

1. Examine all the balls for pits or partial flatness. If any one is found defective, the entire set (including both races) should be replaced. If either race is pitted, shows rust spots, or is damaged in any way, replace both races and all balls.
2. Examine dust seal under lowest race and replace if damaged.
3. Install the fork and handle crown to the under-bracket. If the handle crown is not aligned with the fork, the under-bracket is considered to be bent. If bent more than 10 mm, replace the bracket.

## **Removal**

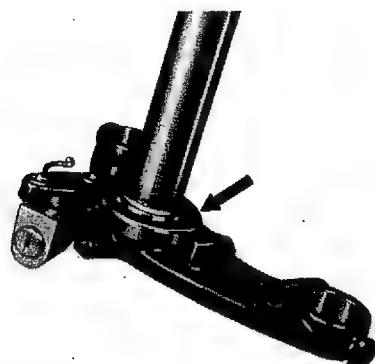
1. Remove races from head pipe using drift punch and hammer as shown. Work the race out gradually by tapping lightly around its complete diameter.



2. Remove the bearing race from the lower bracket by tapping around its diameter with a drift punch and hammer.

**NOTE:**—

Remove dust seal.



## Installation

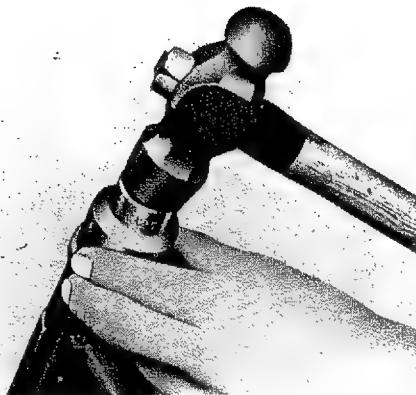
1. If pressed-in races have been removed, tap in new races.

### **CAUTION:**

If races are not in correct angles to the under-bracket, the handlebars will not turn smoothly at certain angles, thus adversely affecting the stability of the machine.

Any impurities on the race seat will put the race in a tilting position. Thoroughly clean the race seat before installation.

2. Grease the lower ball race of the bottom assembly and arrange the balls around it. Then apply more grease.



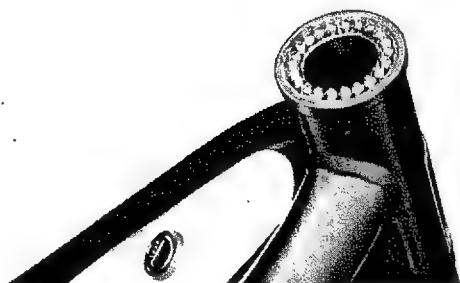
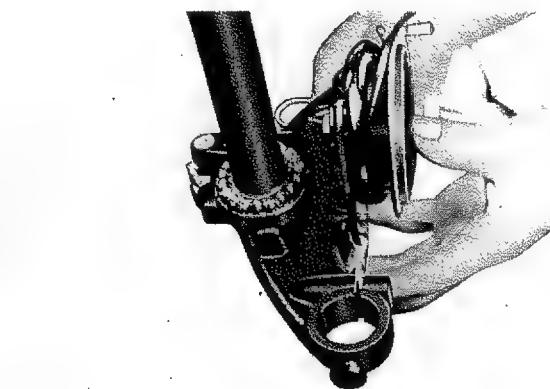
3. Grease the lower ball race of the upper assembly and arrange the balls around it. Then apply more grease and set the top race into place.

### **NOTE:**

Use medium-weight wheel bearing grease of quality manufacturer, preferably waterproof.

4. Carefully slip the underbracket stem up into the steering head. Hold the top bearing assembly in place so the stem does not knock any balls out of position.
5. Set the upper bearing cover on and install the ring nut. Tighten the ring nut so that all freeplay is taken up, but so the bracket can still pivot freely from lock to lock. Recheck for free play after the entire fork unit has been installed. (Refer to Chapter 2, Adjustment procedure.)

Normally, screw in the ring nut until tight, and back it out 1/4 turn.



6. Install the fork tubes into the under-bracket to ease headlight body installation.
7. Install the headlight body and stays onto the fork tubes with all rubber and steel spacing washers properly in place.
8. Install the upper fork bracket. Tighten steering fitting bolt. Torque to specification.

**Steering fitting bolt torque:**  
21 Nm (2.1 m • kg)

9. Tighten upper fork tube bolts and torque to specification.

**Upper fork tube bolt torque:**  
21 Nm (2.1 m • kg)

**Handlebars mounting bolt torque:**  
21 Nm (2.1 m • kg)

10. Install handlebars and torque to specification.

12 Nm (1.2 m • kg)

11. Reconnect all electrical wiring and check operation.
12. Install headlight and check operation.
13. Install front wheel.
14. Reconnect speedometer cable.
15. Reconnect front and rear brake and throttle cables and check operation.

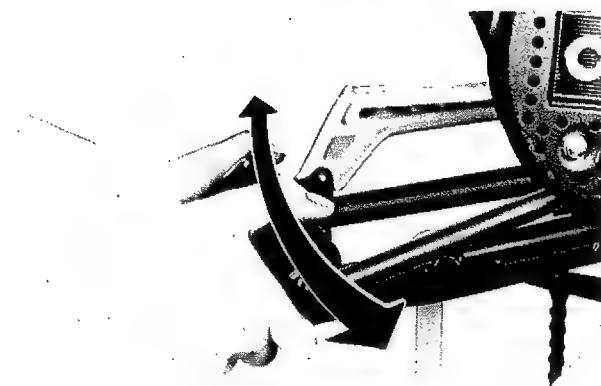
## SWING ARM

### Swing arm inspection

- With rear wheel and shock absorbers removed, grasp the end of the arm and move from right to left to check for freeplay.

Swing arm freeplay:  
1.0 mm

- If freeplay is excessive, remove swing arm and replace swing arm bushing.



### Swing arm lubrication

- Apply grease to pivot shaft.

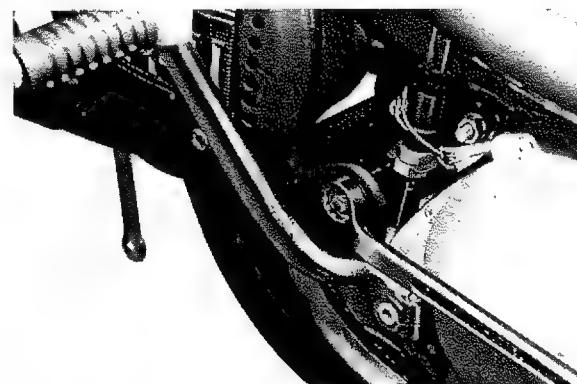
Recommended lubricant:  
Smooth chassis lube grease

- Wipe off excess grease.

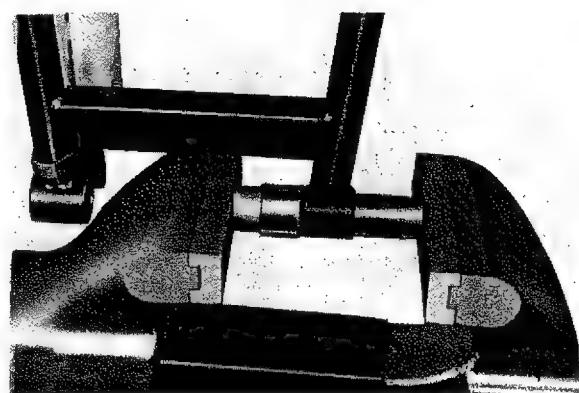
### Swing arm removal

- Remove nut on swing arm pivot bolt and tap out bolt with a long aluminum or brass rod.

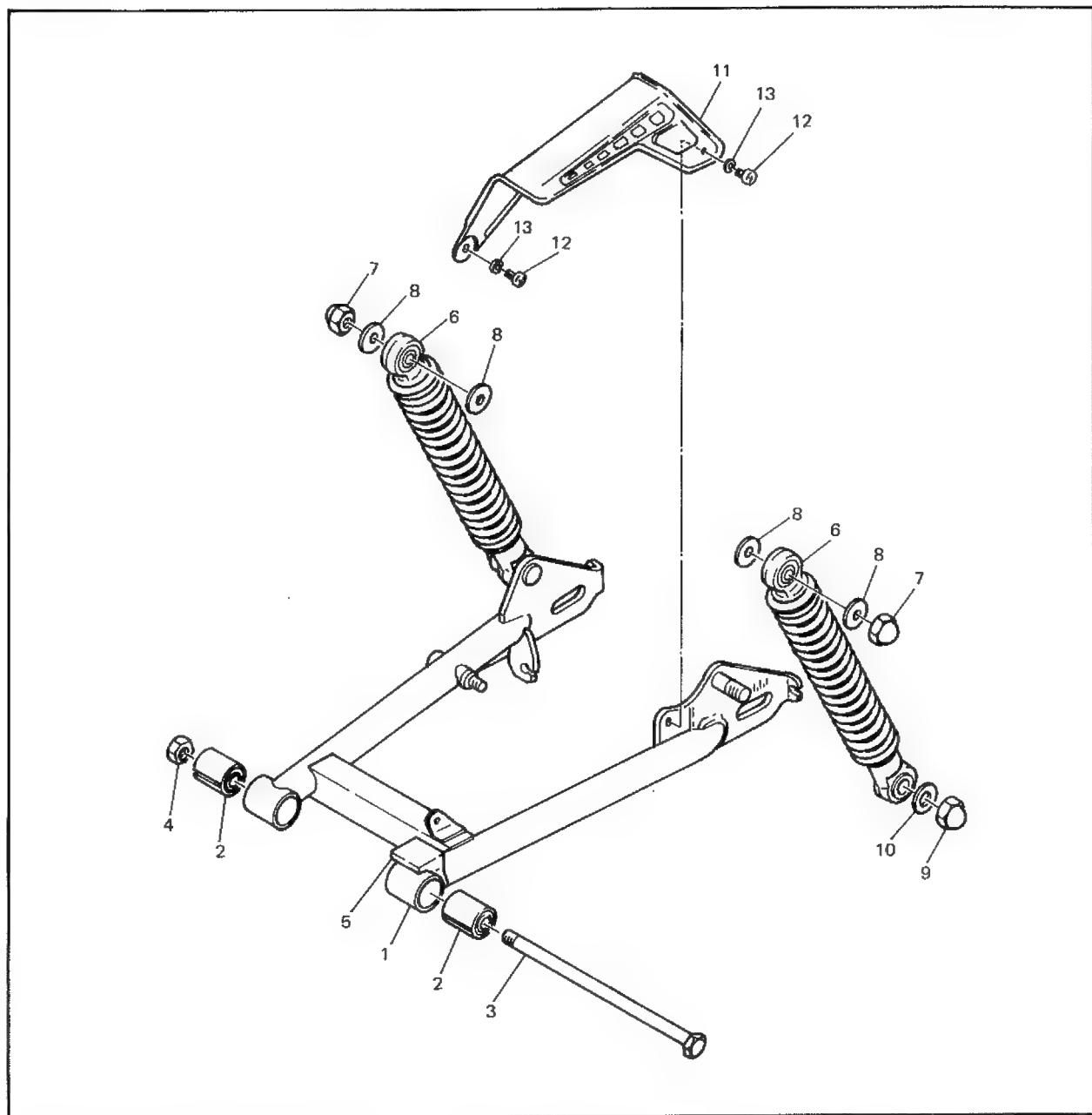
Pivot bolt torque:  
39 Nm (3.9 m · kg)



- Tap out old bushing from each side of pivot.
- Install new bushing using a press or hand vise.



## Rear arm



1. Rear arm complete	6. Rear shock absorber	11. Chain case half
2. Rear arm bushing	7. Crown nut	12. Pan head screw
3. Pivot shaft	8. Washer	13. Spring washer
4. Nut	9. Cap nut	
5. Guard seal	10. Washer	

## AUTO-COCK

The auto-cock is designed to be opened and closed by pressure pulses from the up and down movement of the engine piston.

### Advantages of the auto-cock

#### 1. Ease of operation

The valve is actuated by pressure pulses from intake manifold which saves the rider the trouble of manually opening and closing the fuel cock before and after operation.

#### 2. Additional safety

The auto-cock assures additional safety when the motorcycle is turned over by accident, because fuel leaks very slow.

#### 3. No fuel leakage from carburetor while parking

Being operated by pressure pulses from the crankcase, the valve automatically closes whenever the engine stops. This prevents the fuel from overflowing thru the carburetor.

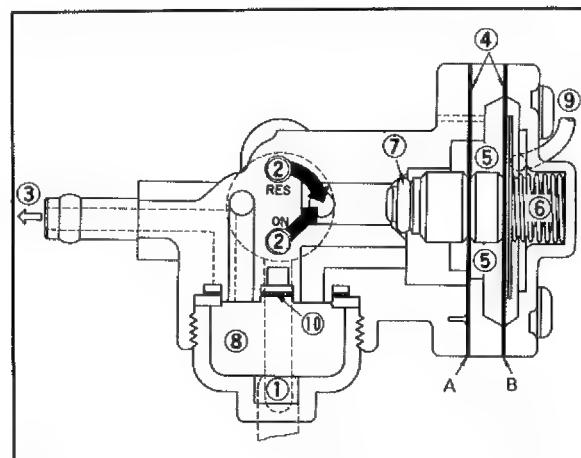
### Construction

#### 1. Diaphragm assembly

The diaphragm assembly consists of diaphragm A, diaphragm B and a valve. The diaphragm B maintains constant fuel pressure on the diaphragm A, thus diaphragm A may act only with negative pressure from intake manifold. In this way, diaphragm B helps diaphragm A to act without receiving fuel pressure from the fuel tank.

#### 2. Handling the auto-cock

- Do not attempt to disassemble the diaphragm chamber.
- Periodically, remove the filter cup and clean the filter.

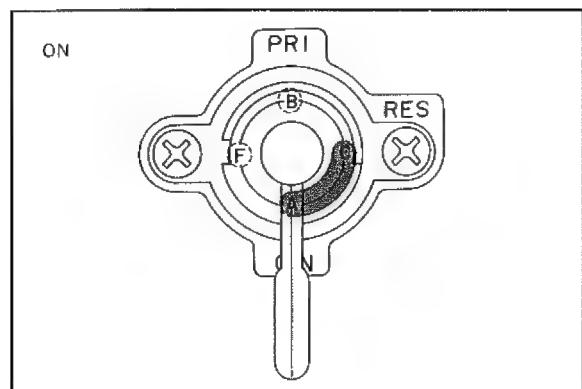
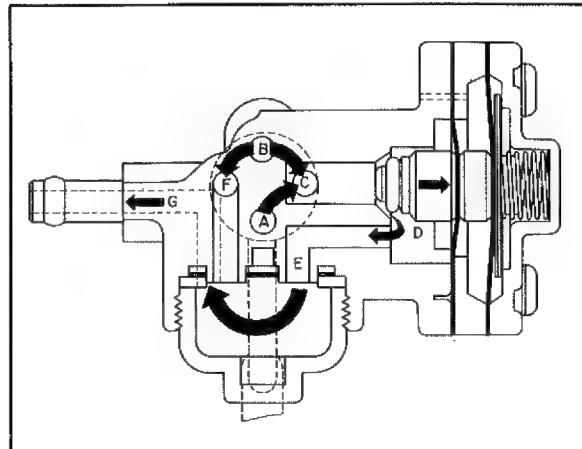


1. Lever	6. Spring
2. From fuel tank	7. Valve
3. To carburetor	8. Filter cup
4. Diaphragm	9. Negative pressure pipe
5. Air	10. Filter

## Position of the cock lever and fuel passages

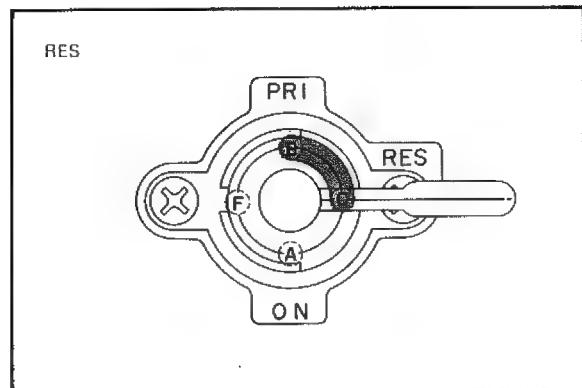
### 1. Cock lever "ON"

When a vacuum is generated in the intake manifold by the piston moving down, the diaphragm in the cock overcomes the force of the spring, thus causing the diaphragm assembly to move to the right, opening the valve. As the valve opens, the fuel in the tank flows through the A passage and C passage of the main pipe to the cock lever chamber, and passes through the D passage. The fuel from the D passage flows through the opening of the valve to the E passage and enters the filter cup. The fuel is filtered and fed to the carburetor through the G passage and the fuel pipe.



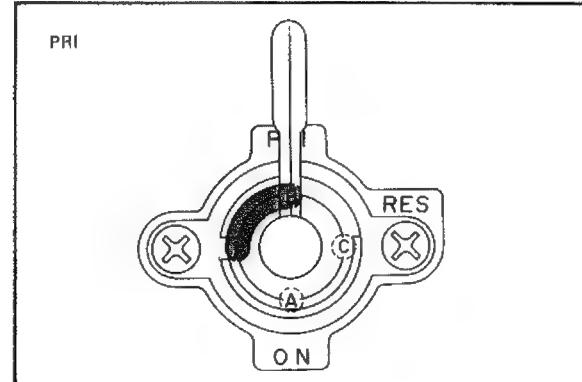
### 2. Cock lever "RES"

The fuel flows into the B passage and then into the carburetor through the same passages as in the case of cock lever "ON".



### 3. Cock lever "PRI"

The fuel flows into the B passage and then into the filter cup, irrespective of the valve position. The fuel from the filter cup passes through the G passage and enters the carburetor through the fuel pipe.



4. When the engine is stopped  
The pressure in the rubber pipe becomes positive, and the diaphragm assembly is moved to the left by the force of the spring. As a result, the valve is closed, thus stopping the flow of the fuel.

#### **Check lever position for travelling**

##### **1. On position**

For general travelling and parking, the cock lever should be placed in ON.

##### **2. RES position**

When the fuel has run out with the cock lever in ON, it should be placed in RES. With the fuel cock in RES, the tank should be filled at the first opportunity.

##### **3. PRI position**

To fill the fuel tank of a new motorcycle or one in which the fuel tank or carburetor float chamber is empty, turn the cock lever to PRI. With the cock lever in PRI, the fuel directly enters the filter cup from the fuel tank, bypassing the rubber pipe.

After filling the tank, turn the cock lever to ON.

#### **Checking**

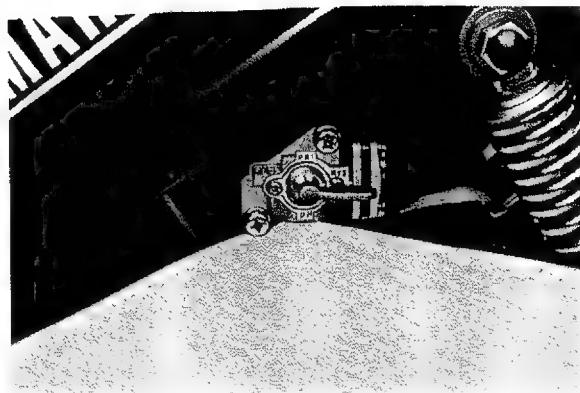
Remove the filter cup, set the auto-cock lever in ON or RES, and kick the kick pedal. When gasoline begins to flow out, stop kicking. If gas continues flowing, the auto-cock is in bad condition.

1. Gasoline flows out when pedal is not kicked.
  - a. The valve O-ring or the valve seat is damaged.

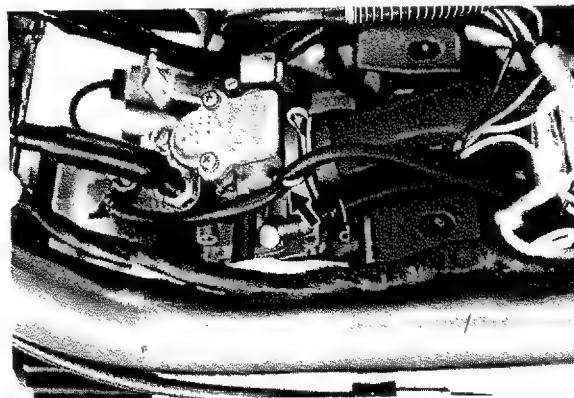


- 124 - 1. Filter cup

b. Dirt exists between the valve seat and valve.



2. Gasoline does not flow out when kick pedal is kicked.  
a. The diaphragm is holed or cracked.  
b. The vacuum pipe connecting the carburetor to the auto-cock is out of place, bent or holed.  
c. The fuel tank is empty.



## CABLES AND FITTINGS

### Cable maintenance

#### NOTE:

See Maintenance and Lubrication Intervals Charts for additional information.

Cable maintenance is primarily concerned with preventing deterioration through rust and weathering and providing proper lubrication to allow the cable to move freely within its housing.

Cable removal is straight-forward and uncomplicated. Removal will not be discussed within this section. For details, see the individual maintenance section for which the cable is an integral part.

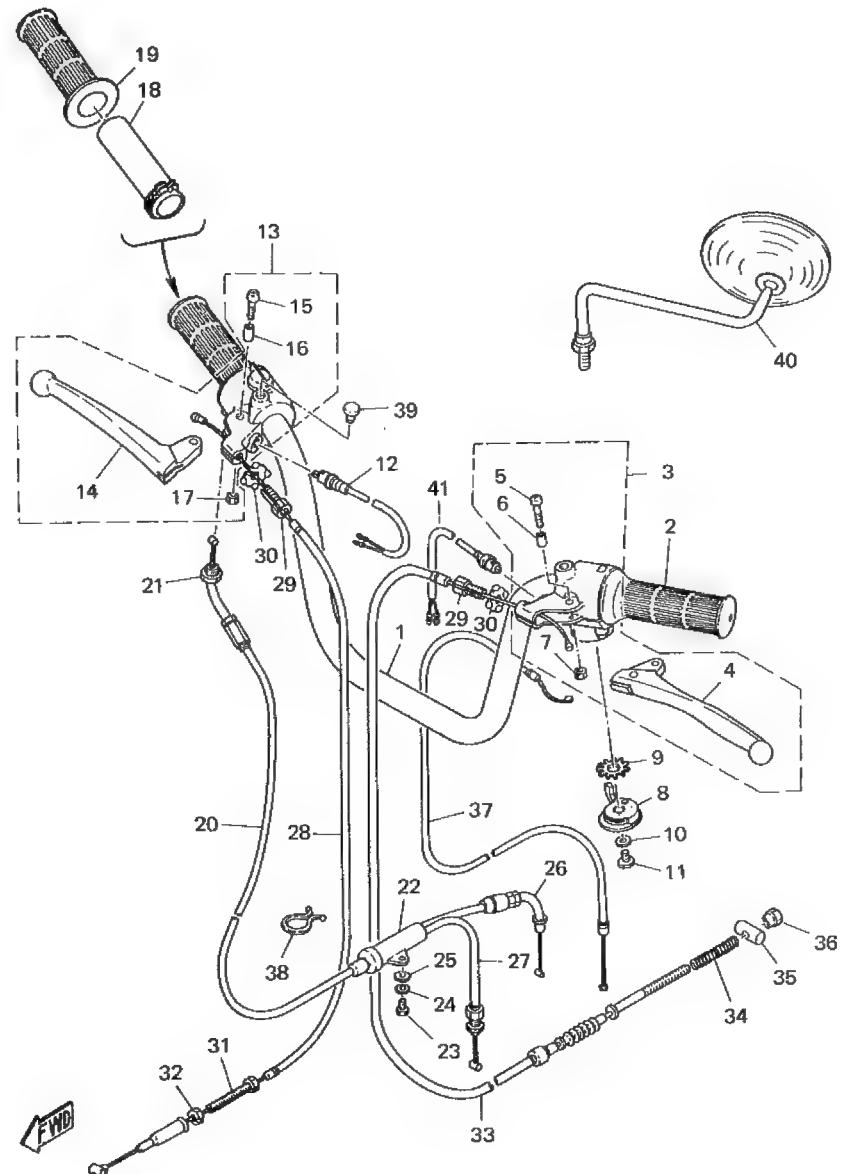
Cable routing is of paramount importance. For details of cable routing, see the cable routing diagrams at the general information.

1. Remove the cable.
2. Check for free movement of cable within its housing. If movement is obstructed, check for fraying or kinking of the cable strands. If damage is evident, replace the cable assembly.
3. To lubricate cable, hold in vertical position. Apply lubricant to uppermost end of cable. Leave in vertical position until lubricant appears at bottom end. Allow excess to drain and re-install.

#### NOTE:

Choice of lubricant depends upon conditions and preference. However, a semi-drying chain and cable lubricant such as Yamaha chain and cable lube will probably perform adequately under most conditions.

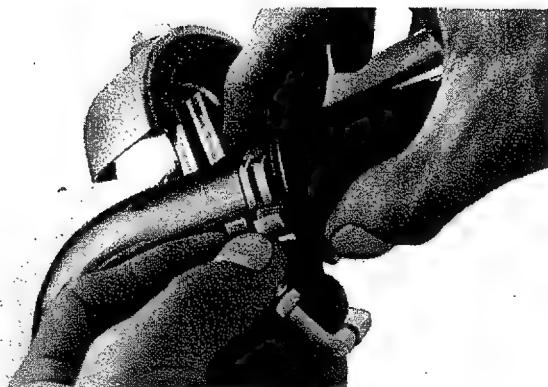
## Handle, wire



1. Handle	16. Lever collar	31. Bolt
2. Left grip	17. Hexagon nut	32. Nut
3. Left lever holder assembly	18. Guide tube	33. Brake rear wire
4. Left lever	19. Right grip	34. Compression spring
5. Panhead screw	20. Throttle wire	35. Pin
6. Lever collar	21. Hexagon nut	36. Nut
7. Hexagon nut	22. Wire cylinder	37. Starter wire
8. Starter lever	23. Hexagon bolt	38. Wire harness clamp
9. Washer	24. Spring washer	39. Plug
10. Plate washer	25. Plate washer	40. Rear view mirror
11. Bolt	26. Pump wire	41. Rear brake switch
12. Front stop switch assembly	27. Throttle wire 2	
13. Right lever holder assembly	28. Brake front wire	
14. Right lever	29. Bolt	
15. Panhead screw	30. Adjusting nut	

## Throttle maintenance

1. Remove the two Phillips head screws from throttle housing assembly and separate two halves of housing.
2. Disconnect cable end from throttle grip assembly and remove grip assembly.
3. Wash all parts in mild solvent and check contact surfaces for burrs or other damage. (Also clean and inspect right-hand end of handlebar.)
4. Lubricate contact surfaces with light coat of lithium soap base grease and reassemble.



### **NOTE:**

Tighten housing screws evenly to maintain an even gap between the two halves.

5. Check for smooth throttle operation and quick spring return when released and make certain that housing does not rotate on handlebar.

## Cable junction maintenance

The throttle cable cylinder (junction point for Autolube control cable) must be periodically maintained.

1. Remove throttle cable number one from handlebar housing.
2. Remove throttle cable number two from carburetor mixing chamber top.
3. Remove Autolube pump cable from pump pulley. Remove cable adjustor.
4. Remove seat and fuel tank.
5. Remove cable/cylinder assembly complete.
6. Remove cylinder cap, throttle cable two and Autolube pump cable.
7. Wash assembly thoroughly in solvent.
8. Lubricate all associated cables.
9. Apply a thin coating of lubricant to cylinder walls.
10. Reassembly all cables. Make sure cylinder is sealed from damage due to weather and riding conditions.  
Re-install.  
See cable routing diagrams for correct installation position. See Mechanical Adjustments Chapter for correct cable adjustment.

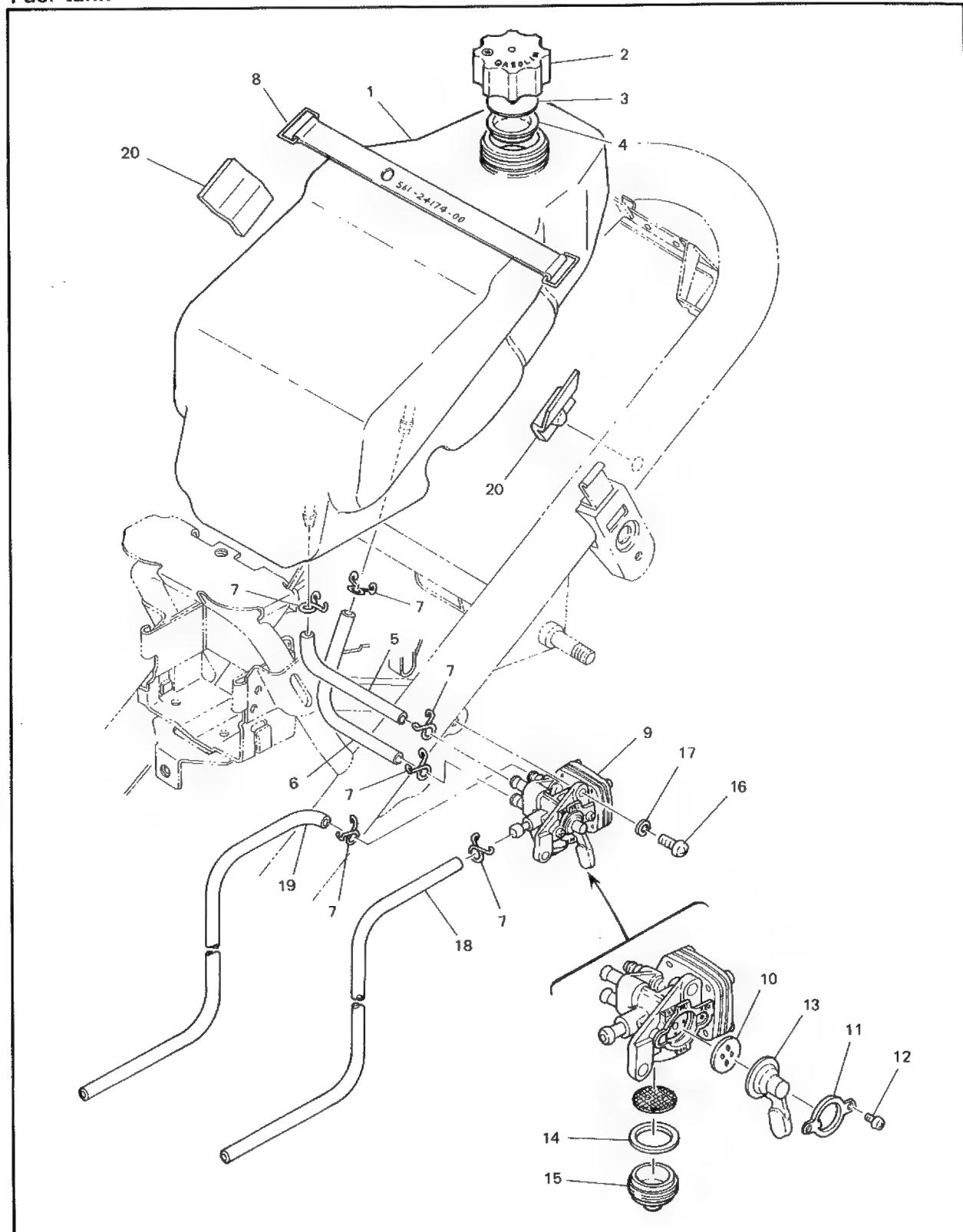
### **NOTE:**

A small amount of lithium soap base grease may be used in lieu of cable lubricant.

However, if machine is to be used in extreme cold, use the cable lubricant.

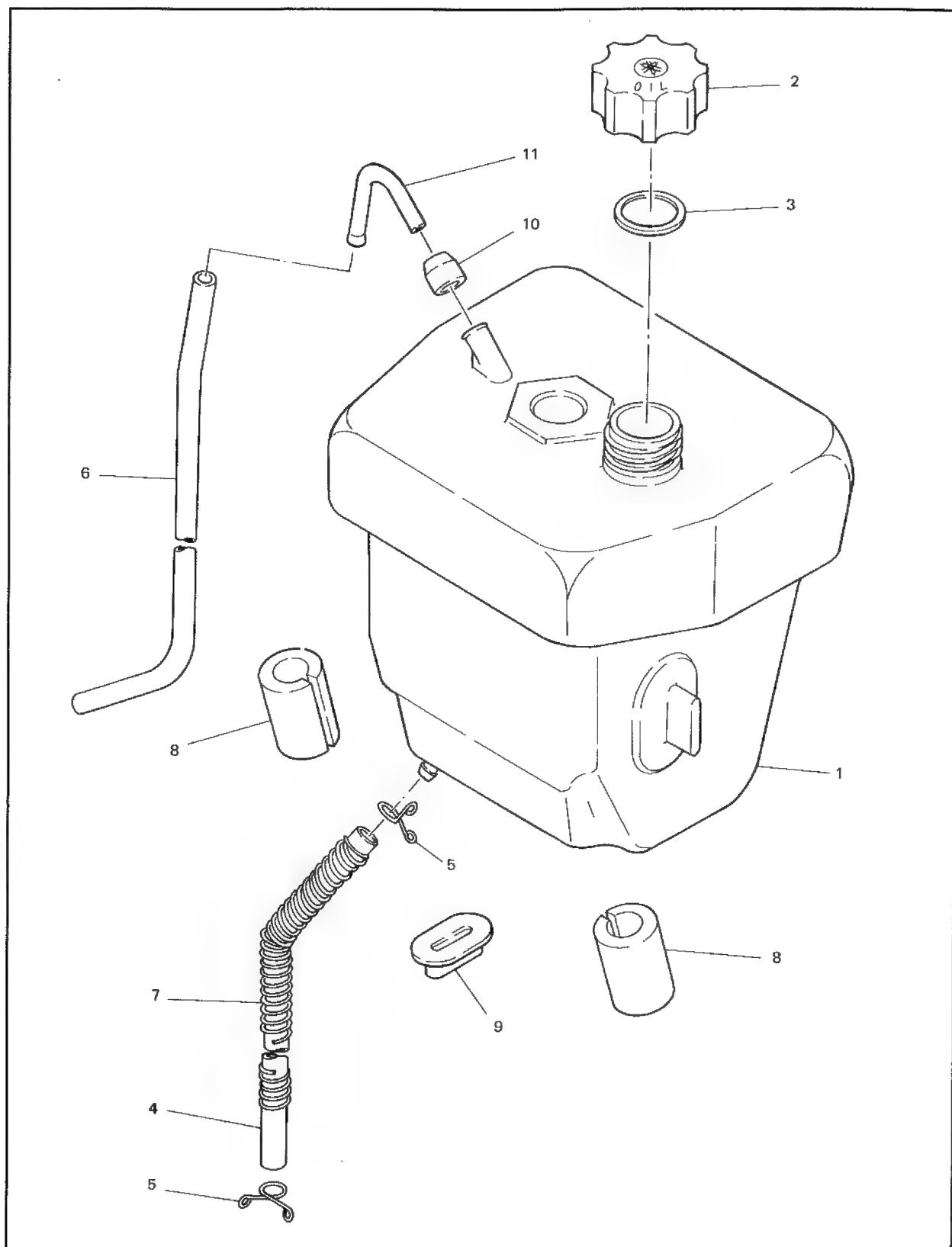
## MISCELLANEOUS CHASSIS COMPONENTS

### Fuel tank



1. Fuel tank	6. Fuel pipe	11. Spring plate	16. Pan head screw
2. Cap body	7. Clip	12. Pan head screw	17. Spring washer
3. Gasket plate 1	8. Tank fitting band	13. Lever	18. Hose
4. Gasket plate 2	9. Fuel cock assembly	14. Packing	19. Pipe
5. Fuel pipe	10. Packing	15. Filter cup	20. Locating damper

## **Oil tank**



1 Oil tank

2 Cap body

3 Cap gasket

4 Hose

5 Clip

6 Hose

7 Compression spring

8 Locating damper

9 Locating damper

10 Grommet

11 Connector tube

## **CHAPTER 6. ELECTRICAL**

<b>ELECTRICAL COMPONENTS.....</b>	132
<b>CHECKING OF CONNECTIONS.....</b>	133
<b>IGNITION SYSTEM.....</b>	134
CIRCUIT DIAGRAM.....	134
TROUBLESHOOTING .....	135
<b>CHARGING SYSTEM.....</b>	139
CIRCUIT DIAGRAM.....	139
TROUBLESHOOTING .....	140
<b>LIGHTING SYSTEM .....</b>	143
CIRCUIT DIAGRAM.....	143
TROUBLESHOOTING .....	144
<b>SIGNAL SYSTEM.....</b>	146
CIRCUIT DIAGRAM.....	146
TROUBLESHOOTING .....	148
SIGNAL SYSTEM CHECK.....	150





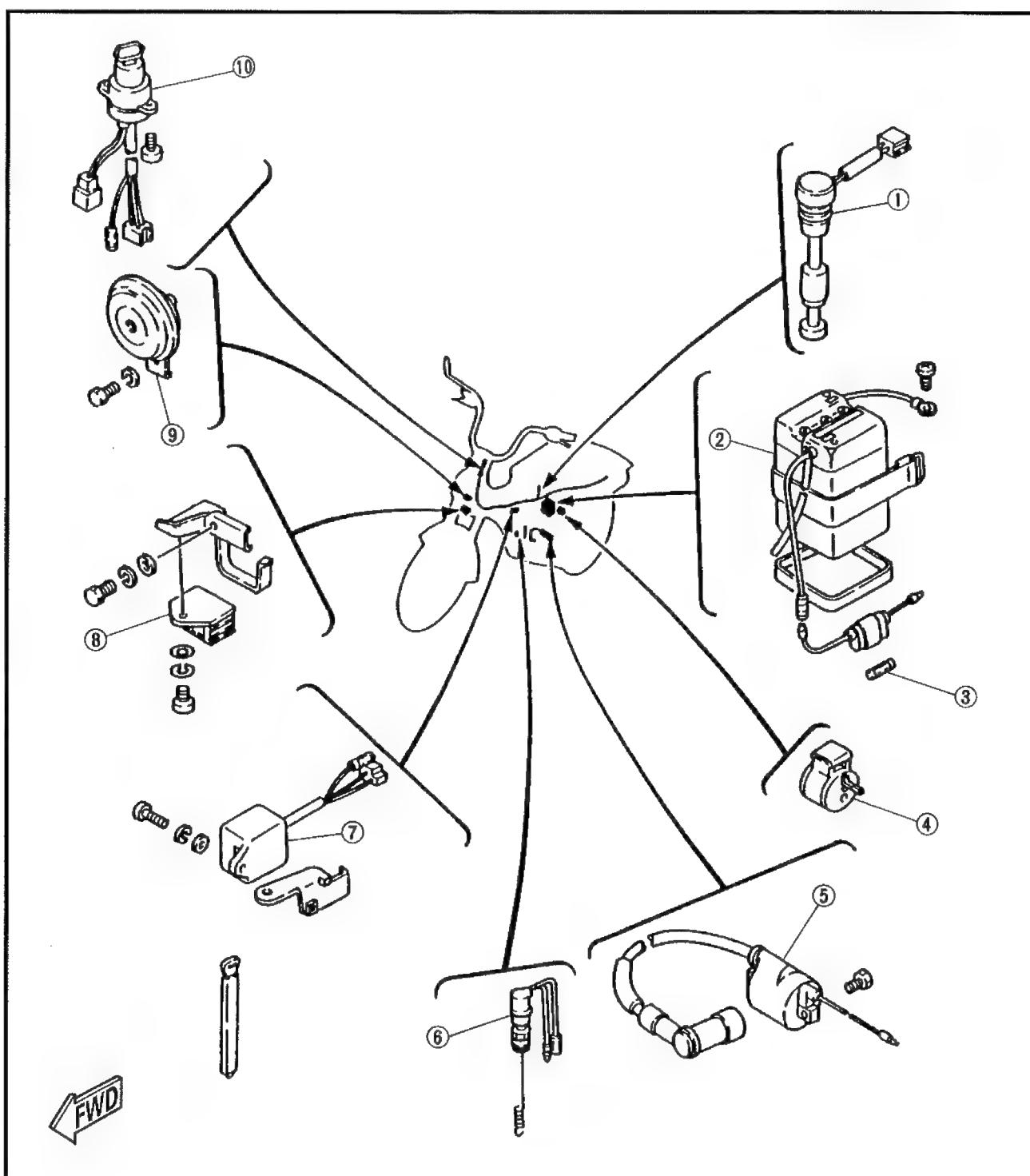
6

# ELECTRICAL

## ELECTRICAL COMPONENTS

① Oil level gauge	⑧ Rectifier/regulator
② Battery	⑨ Horn
③ Fuse	⑩ Main switch
④ Flasher relay	
⑤ Ignition coil	
⑥ Rear brake switch	
⑦ CDI unit	

SPECIFICATIONS	RESISTANCE
IGNITION COIL:	
PRIMARY	0.32 ~ 0.48 Ω
SECONDARY	5.68 ~ 8.52 kΩ
PICK-UP COIL	16 ~ 24 Ω
SOURCE COIL	264 ~ 396 Ω
CHARGING COIL	0.30 ~ 0.44 Ω



## CHECKING OF CONNECTIONS

Check the connectors for stains, rust, moisture, etc.

### 1. Disconnect:

- Connector

### 2. Check:

- Connector

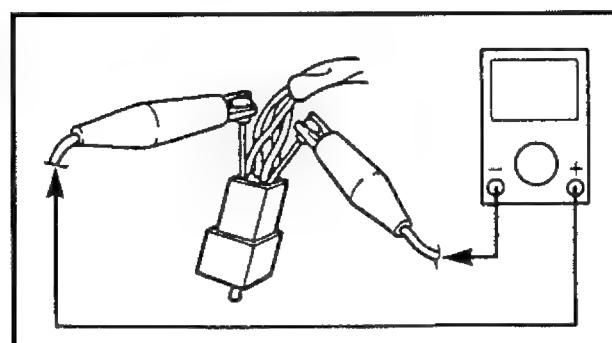
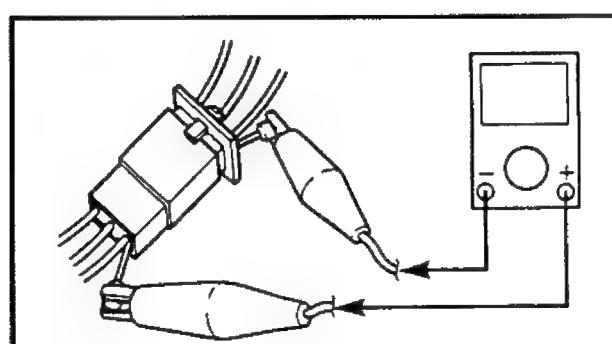
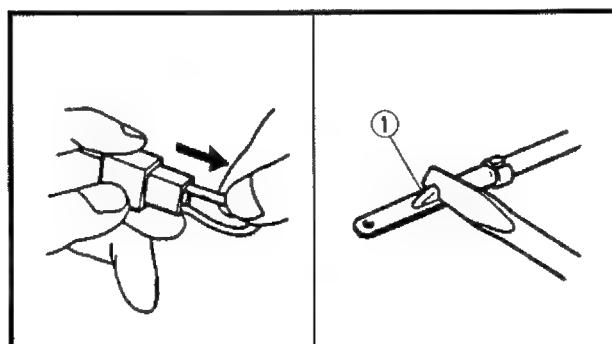
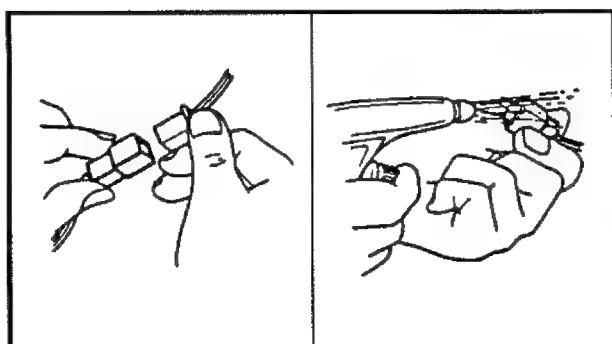
Moisture → Dry each terminal with an air blower.

Stains/rust → Connect and disconnect the terminals several times.

### 3. Check:

- Connector leads

Looseness → Bend up the pin ① and connect the terminals.



### 4. Connect:

- Connector terminals

**NOTE:** \_\_\_\_\_  
The two terminals "click" together.

### 5. Check:

- Continuity (using a pocket tester)

**NOTE:** \_\_\_\_\_

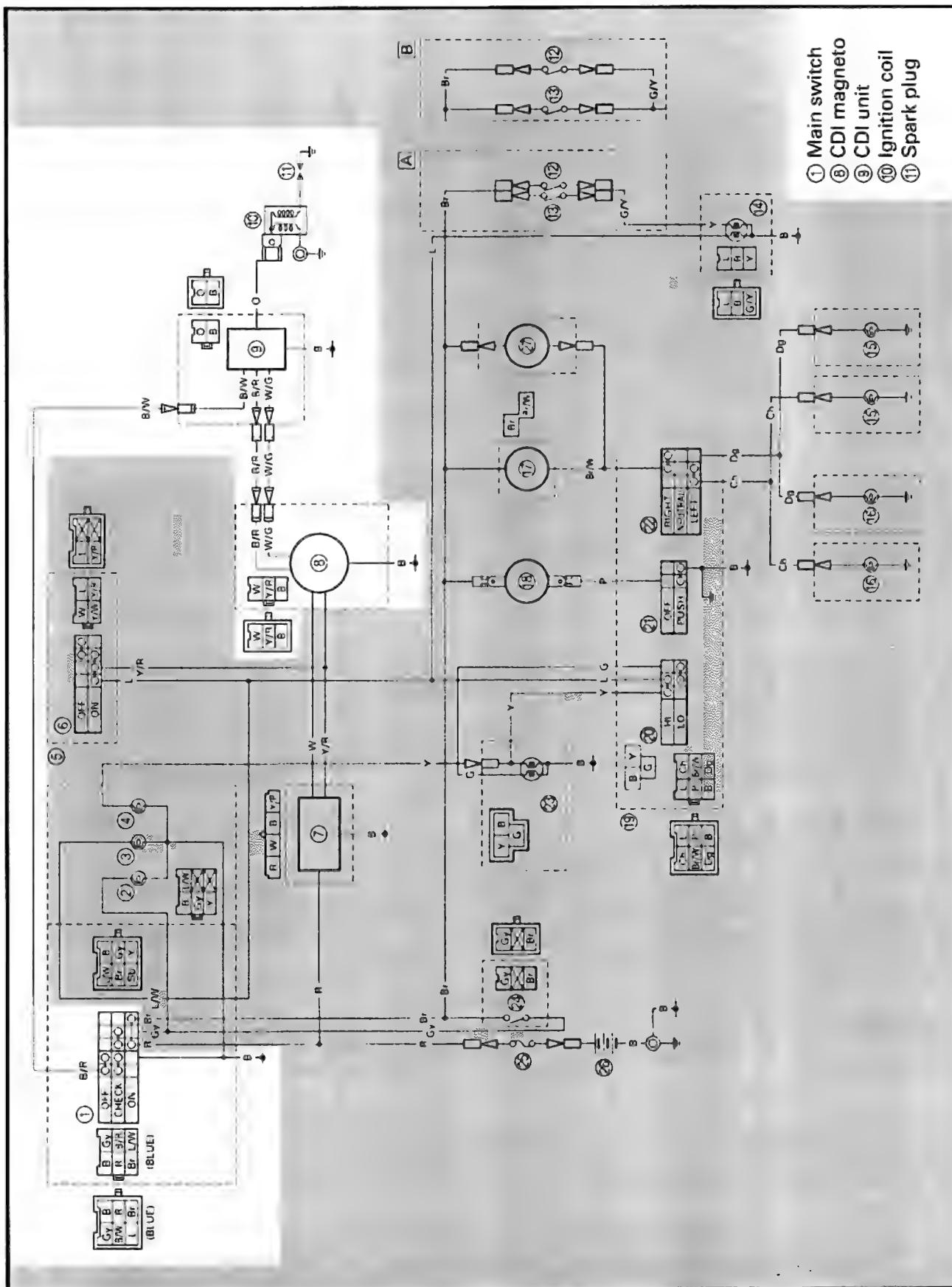
- If there is no continuity, clean the terminals.
- When checking the wire harness be sure to perform steps 1 to 3.
- As a quick remedy, use a contact revitalizer available at most part stores.
- Check the connector with a pocket tester as shown.

### COLOR CODE

B .....	Black	L .....	Blue	Y .....	Yellow	W/G .....	White/Green
Br .....	Brown	O .....	Orange	B/R .....	Black/Red	Y/R .....	Yellow/Red
Ch .....	Chocolate	P .....	Pink	B/W .....	Black/White	Y/W .....	Yellow/White
Dg .....	Dark green	R .....	Red	Br/W .....	Brown/White		
G .....	Green	Sb .....	Sky blue	G/Y .....	Green/Yellow		
Gy .....	Gray	W .....	White	L/W .....	Blue/White		

# IGNITION SYSTEM

## CIRCUIT DIAGRAM



## TROUBLESHOOTING

### IF THE IGNITION SYSTEM FAILS TO OPERATE (NO SPARK OR INTERMITTENT SPARK):

#### Procedure

Check:

- 1.Spark plug
- 2.Ignition spark gap
- 3.Spark plug cap resistance
- 4.Ignition coil resistance

- 5.Main switch
- 6.Pickup coil resistance
- 7.Source coil resistance
- 8.Wiring connection  
(the entire ignition system)

**NOTE:**

Use the following special tool(s) for troubleshooting.



**Ignition checker:**

90890-06754

**Pocket tester:**

90890-03112

#### 1.Spark plug

- Check the spark plug condition.
- Check the spark plug type.
- Check the spark plug gap.  
Refer to "SPARK PLUG INSPECTION" in CHAPTER 2.

**Standard spark plug:**  
**B6HS/NGK**



**Spark plug gap:**  
0.5 ~ 0.6 mm

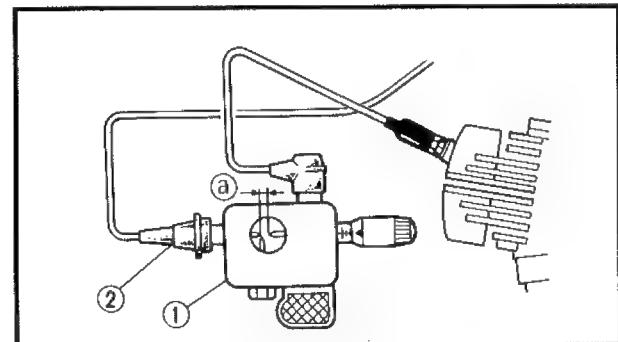
INCORRECT

CORRECT

Repair or replace the spark plug.

#### 2.Ignition spark gap

- Disconnect the spark plug cap from the spark plug.
- Connect the ignition checker ① as shown.
- ② Spark plug cap
- Turn the main switch to "ON".



- Check the ignition spark gap ①.
- Crank the engine by kick starter, and increase the spark gap until a misfire occurs.



**Minimum spark gap:**  
5.0 mm

MEETS SPECIFICATION

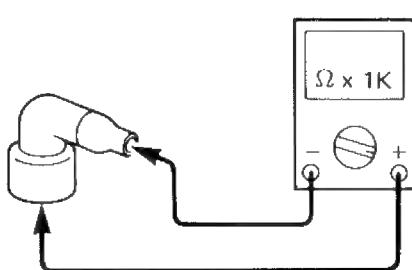
The ignition system is not faulty.

↓ OUT OF  
SPECIFICATION  
OR NO SPARK

EB802015

### 3.Spark plug cap resistance

- Remove the spark plug cap.
- Connect the pocket tester ( $\Omega \times 1k$ ) to the spark plug cap.



- Check if the spark plug cap has the specified resistance.



**Spark plug cap resistance:**  
5 k $\Omega$  at 20 °C

OUT OF SPECIFICATION

Replace the spark plug cap.

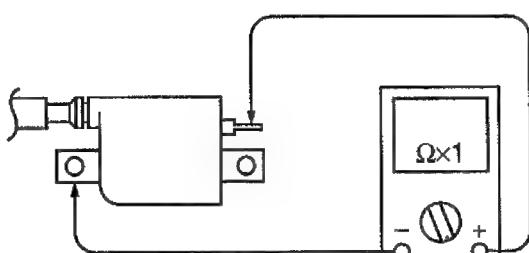
↓ MEETS  
SPECIFICATION

EB802016

### 4.Ignition coil resistance

- Disconnect the ignition coil connector from the wire harness.
- Connect the pocket tester ( $\Omega \times 1$ ) to the ignition coil.

**Tester (+) lead → Orange lead terminal  
Tester (-) lead → Ignition coil base**



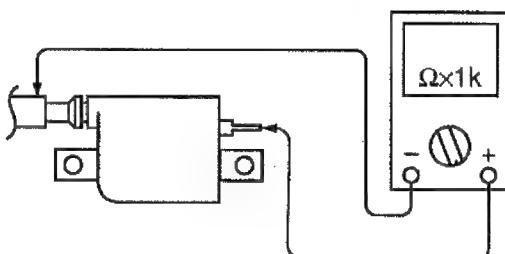
- Check if the primary coil has the specified resistance.



**Primary coil resistance:**  
0.32 ~ 0.48 Ω at 20 °C

- Connect the pocket tester ( $\Omega \times 1k$ ) to the ignition coil.

**Tester (+) lead → Ignition coil base  
Tester (-) lead → Spark plug lead**



- Check if the secondary coil has the specified resistance.



**Secondary coil resistance:**  
5.68 ~ 8.52 kΩ at 20 °C

↓ MEETS SPECIFICATION

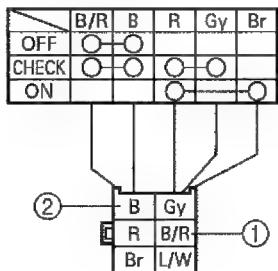
OUT OF SPECIFICATION

Replace the ignition coil.

EB802017

## 5. Main switch

- Disconnect the main switch couplers from the wire harness.
- Check for continuity as follows:  
Black/Red ① – Black ②



↓ CONTINUITY

NO CONTINUITY

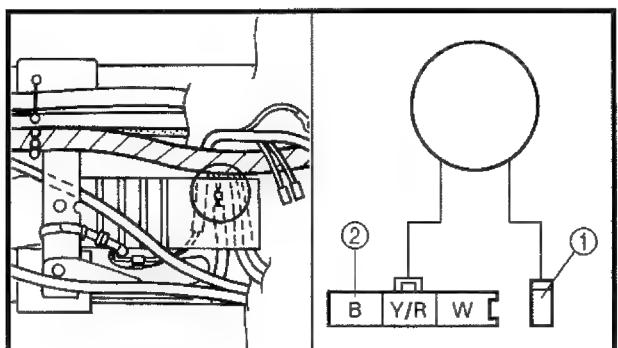
Replace the main switch.

EB80201C

## 6. Pickup coil resistance

- Disconnect the pickup coil coupler from the wire harness.
- Connect the pocket tester ( $\Omega \times 100$ ) to the pickup coil terminal.

**Tester (+) lead → White/Green lead ①  
Tester (-) lead → Black terminal ②**



- Check if the pickup coil has the specified resistance.



**Pickup coil resistance:**  
16 ~ 24 Ω at 20 °C  
(White/Green — Black)

MEETS  
SPECIFICATION

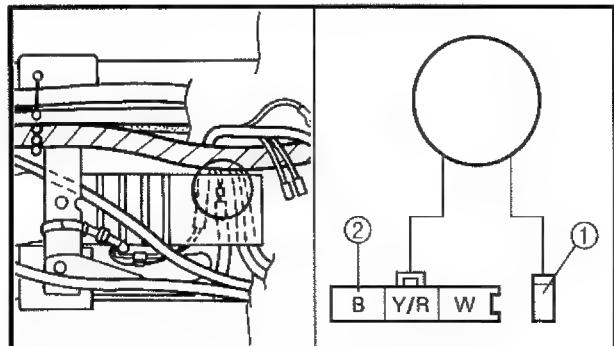
#### 7. Source coil resistance

- Disconnect the source coil leads from the wire harness.
- Connect the pocket tester ( $\Omega \times 100$ ) to the source coil terminal.

Tester (+) lead → Black/Red lead ①  
Tester (-) lead → Black terminal ②

OUT OF SPECIFICATION

Replace the pickup coil.



- Check the source coil for the specified resistance.



**Source coil resistance:**  
264 ~ 396 Ω at 20 °C  
(Black/Red — Black)

MEET  
SPECIFICATION

#### 8. Wiring connection

- Check the connections on the entire ignition system.  
Refer to "CIRCUIT DIAGRAM".

CORRECT

Replace the CDI unit.

OUT OF SPECIFICATION

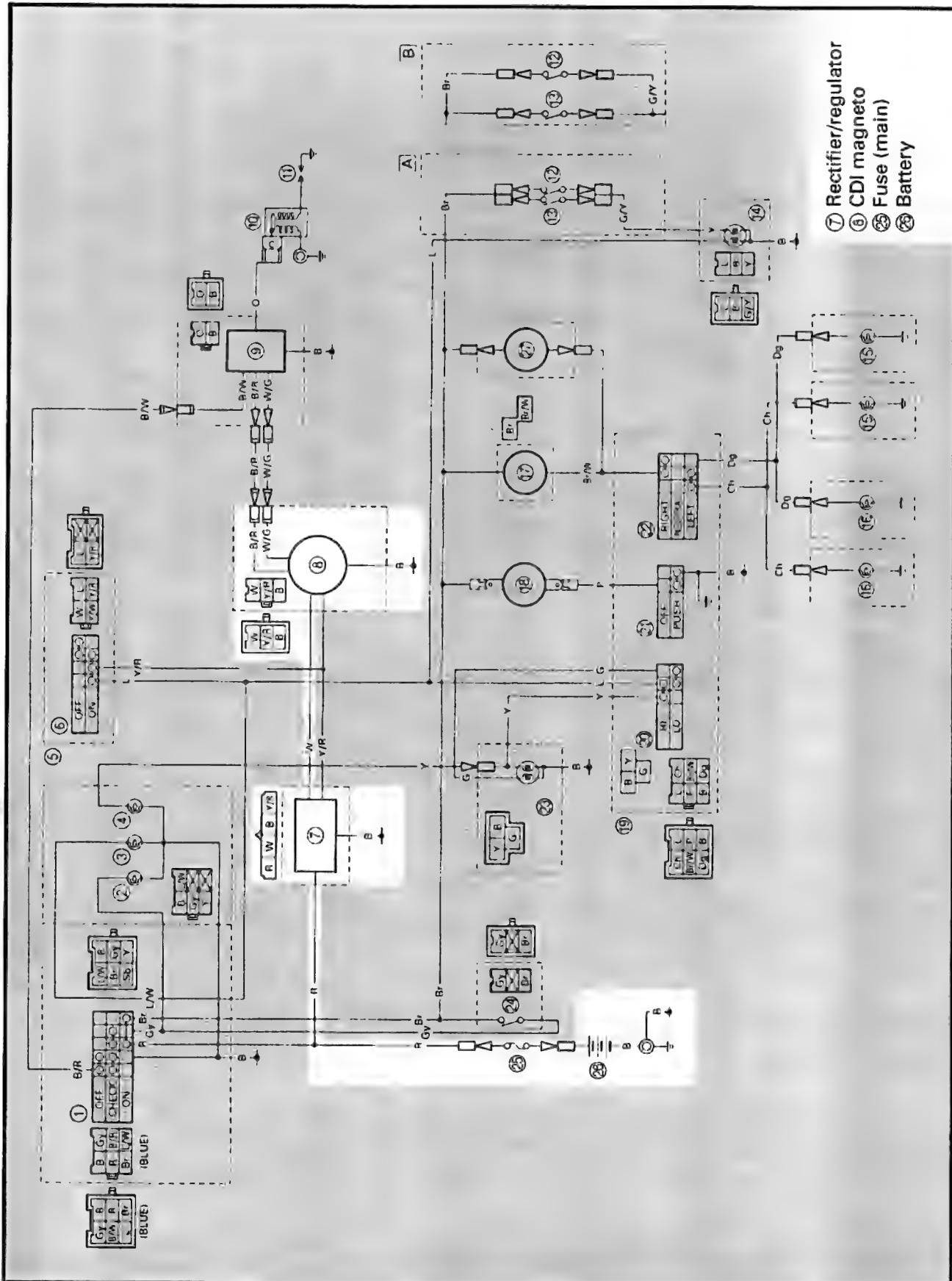
Replace the source coil.

POOR CONNECTION

Properly connect the ignition system.

# CHARGING SYSTEM

## CIRCUIT DIAGRAM



**TROUBLESHOOTING****IF THE BATTERY IS NOT CHARGED:****Procedure**

Check:

- 1.Fuse
- 2.Battery
- 3.Charging voltage

- 4.Charging coil resistance
- 5.Wiring connections  
(the entire charging system)

**NOTE:**

Use the following special tool(s) for troubleshooting.

**Engine tachometer:**

90890-03113

**Pocket tester:**

90890-03112

**1.Fuse**

- Remove the fuse.
- Connect the pocket tester ( $\Omega \times 1$ ) to the fuse.
- Check the fuse for continuity.

**NO CONTINUITY****Replace the fuse.****CONTINUITY****2.Battery**

- Check the battery condition.  
Refer to "BATTERY INSPECTION" in CHAPTER 2.

**INCORRECT**

- Add distilled water to the proper level.
- Clean the battery terminals.
- Recharge or replace the battery.

**CORRECT****\***



EB804011

### 3.Charging voltage

- Connect the engine tachometer to the spark plug lead.
- Connect the pocket tester (DC 20 V) to the battery.

**Tester (+) lead → Battery (+) terminal  
Tester (-) lead → Battery (-) terminal**

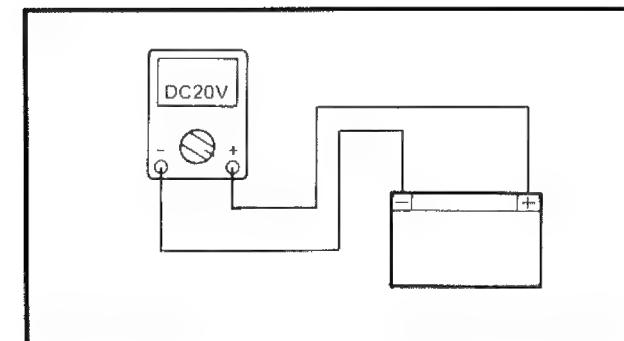
- Start the engine and accelerate to about 8,000 r/min.



**Charging voltage:  
8.5 V or less at 8,000 r/min**

**NOTE:**

Use a fully charged battery.



MEETS SPECIFICATION

The charging circuit is not faulty.

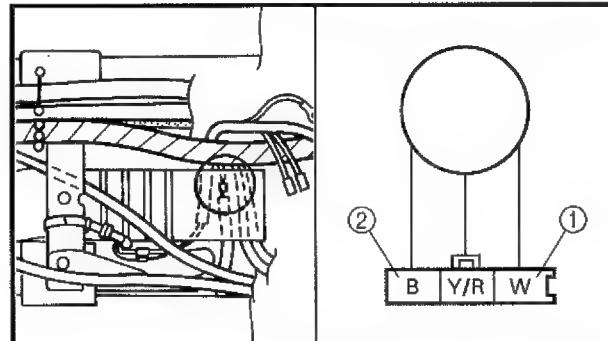


EB804012

### 4.Charging coil resistance

- Remove the generator cover.
- Connect the pocket tester ( $\Omega \times 1$ ) to the charging coils.

**Tester (+) lead → White terminal ①  
Tester (-) lead → Black terminal ②**



- Measure the charging coil resistance.



**Charging coil resistance:  
0.30 ~ 0.44  $\Omega$  at 20°C**



**OUT OF SPECIFICATION**

Replace the charging coil assembly.

EB804016



#### 5.Wiring connections

- Check the connections of the entire charging system.  
Refer to "CIRCUIT DIAGRAM".

POOR CONNECTION

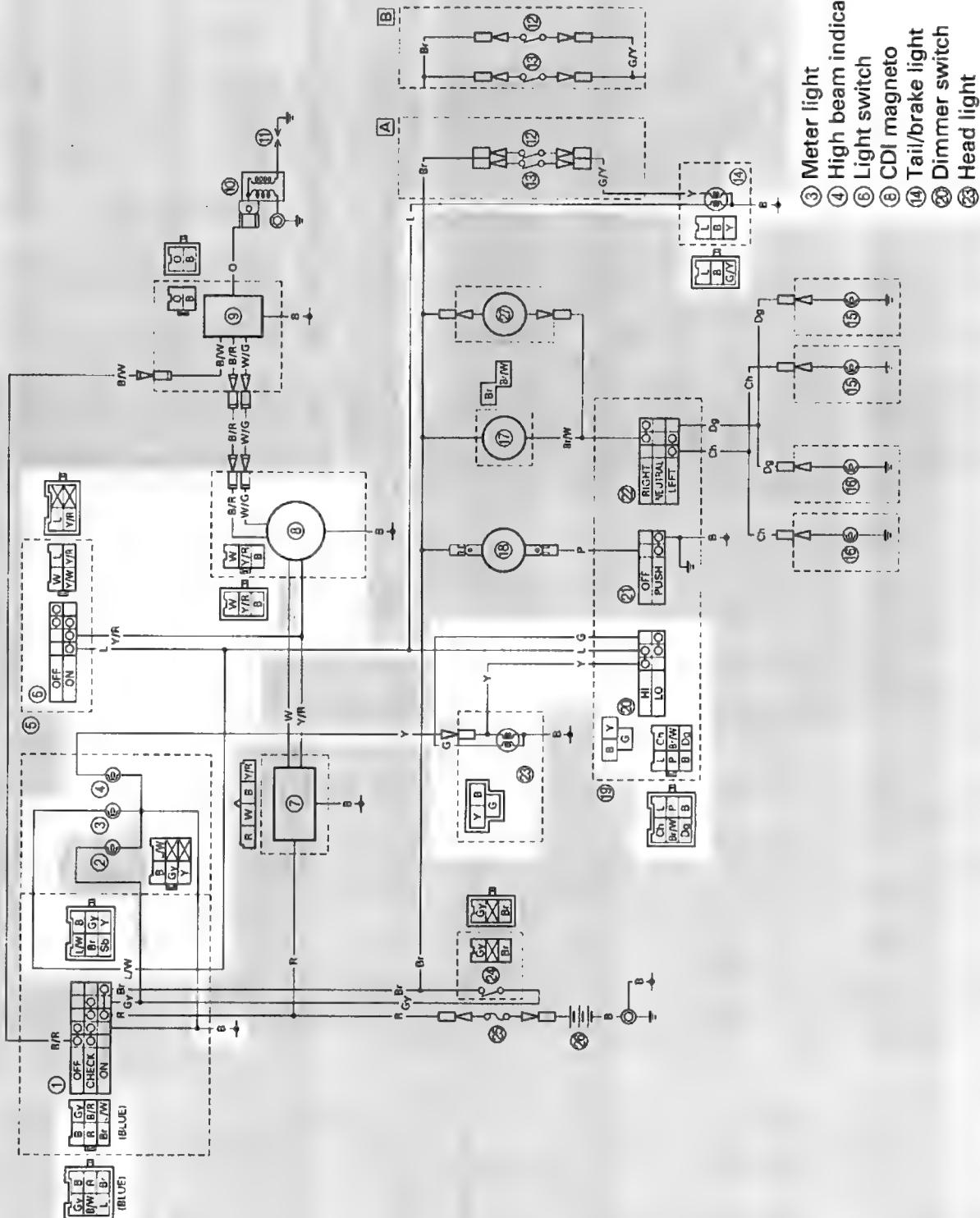
Properly connect the charging system.



Replace the rectifier/regulator.

# LIGHTING SYSTEM

## CIRCUIT DIAGRAM



## TROUBLESHOOTING

**IF THE HEADLIGHT, HIGH BEAM INDICATOR LIGHT, TAILLIGHT AND/OR METER LIGHT FAIL TO COME ON:**

### Procedure

Check:

- 1.Bulb and bulb socket
- 2.Lighting coil
- 3.Light switch
- 4.Dimmer switch
- 5.Wiring connection  
(the entire lighting system)

**NOTE:**

Use the following special tool(s) for troubleshooting.



**Pocket tester:  
90890-03112**

#### 1.Bulb and bulb socket

- Check the bulb and bulb socket for continuity.



**CONTINUITY**

**NO CONTINUITY**

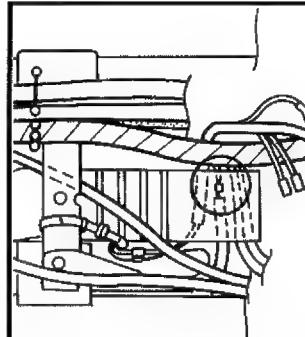


Replace the bulb and/or bulb socket.

#### 2.Lighting coil resistance

- Disconnect the CDI magneto coupler from the wire harness.
- Connect the Pocket Tester ( $\Omega \times 1$ ) to the lighting coil coupler.

**Tester (+) Lead → Yellow/Red ① Terminal  
Tester (-) Lead → Black ② Terminal**



- Measure the lighting coil resistance.



**Lighting coil resistance:  
0.2 ~ 0.3  $\Omega$  at 20 °C**



**MEET  
SPECIFICATION  
\***

**OUT OF SPECIFICATION**



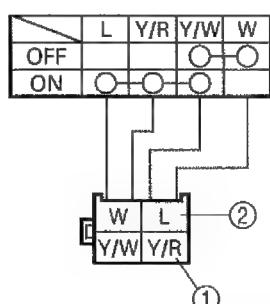
Replace the lighting coil.

EB805011



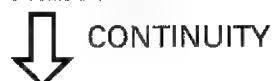
### 3.Light switch

- Disconnect the right handlebar switch coupler from the wire harness.
- Turn the light switch to "ON".
- Check for continuity as follows:  
Yellow/Red ① – Blue ②



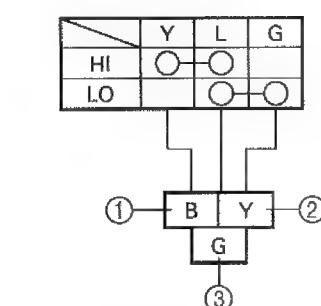
NO CONTINUITY

The light switch is faulty. Replace the right handlebar switch.



### 4.Dimmer switch

- Disconnect the left handlebar switch coupler from the wire harness.
- Turn the dimmer switch to "LO".
- Check for continuity as follows:  
Blue ① – Yellow ②
- Turn the dimmer switch to "HI".
- Check for continuity as follows:  
Blue ① – Green ③



NO CONTINUITY

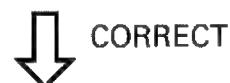
The dimmer switch is faulty.  
Replace the left handlebar switch.



EB805013

### 5.Wiring connections

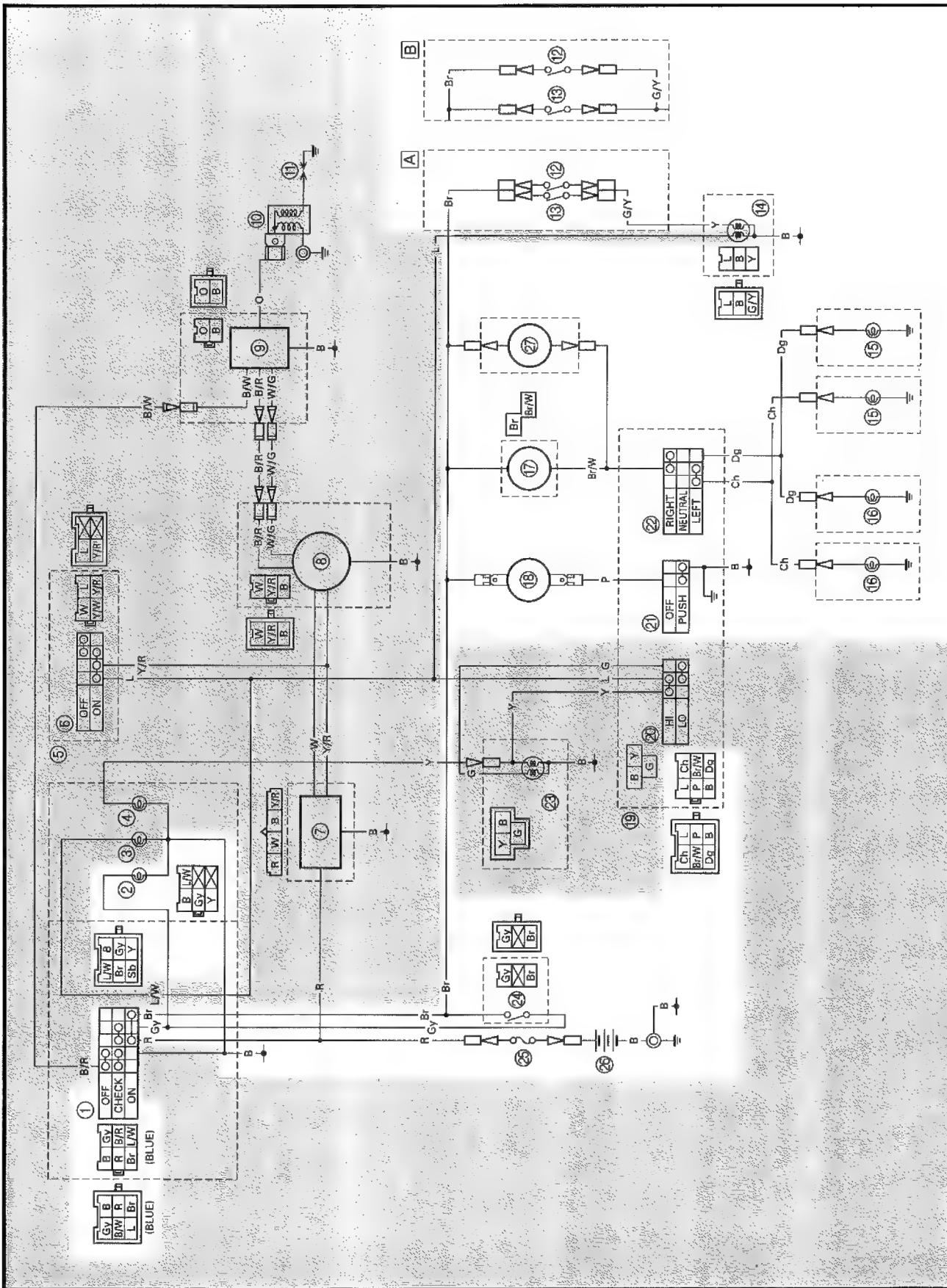
- Check the connections of the entire lighting system.  
Refer to "CIRCUIT DIAGRAM".



Replace the rectifier/regulator.

POOR CONNECTION

Properly connect the lighting system.

**SIGNAL SYSTEM****CIRCUIT DIAGRAM**

- ① Main switch
- ② Oil level indicator light
- ⑫ Rear brake switch
- ⑬ Front brake switch
- ⑭ Tail/brake light
- ⑮ Rear turn signal
- ⑯ Front turn signal
- ⑰ Flasher relay
- ⑱ Horn
- ⑲ Horn switch
- ⑳ Turn switch
- ㉑ Oil level gauge
- ㉒ Fuse
- ㉓ Battery
- ㉔ Audio pilot (LB50 II AC)

- [A] For LB50 II AC
- [B] For LB80 II AC

**TROUBLESHOOTING**

**IF THE FLASHER LIGHT, BRAKE LIGHT AND/OR INDICATOR LIGHT FAIL TO COME ON:  
IF THE HORN FAILS TO SOUND:**

**Procedure**

Check:

- 1.Fuse
- 2.Battery
- 3.Main switch
- 4.Wiring connections (the entire signal system)

**NOTE:** \_\_\_\_\_  
Use the following special tool(s) for troubleshooting.



**Pocket tester:**  
**90890-03112**

**1.Fuse**

- Remove the fuse.
- Connect the pocket tester ( $\Omega \times 1$ ) to the fuse.
- Check the fuses for continuity.

NO CONTINUITY

Replace the fuse.



CONTINUITY

**2.Battery**

- Check the battery condition.  
Refer to "BATTERY INSPECTION" in CHAPTER 2.

**Specific gravity:**  
**1,280 at 20°C**

INCORRECT

- Add distilled water to the proper level.
- Clean the battery terminals.
- Recharge or replace the battery.



CORRECT

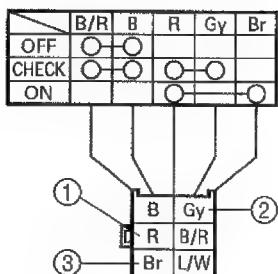
\*



EB802017

### 3. Main switch

- Disconnect the main switch coupler from the wire harness.
- Check for continuity as follows:  
Red ① – Gray ②  
Red ① – Brown ③



NO CONTINUITY

Replace the main switch.



EB806011

### 4. Wiring connections

- Check the connections of the entire signal system.  
Refer to "CIRCUIT DIAGRAM".



CORRECT

POOR CONNECTION

Properly connect the signal system.

Check the condition of each of the signal system's circuits.  
Refer to "SIGNAL SYSTEM CHECK".

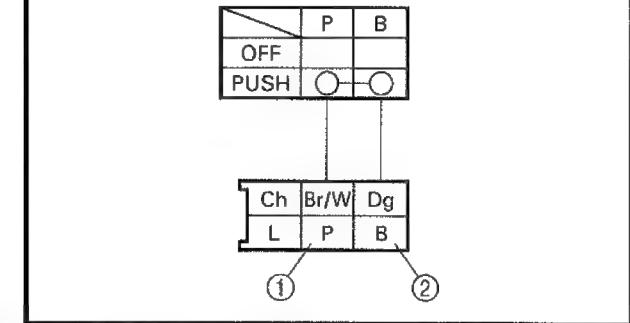
**SIGNAL SYSTEM CHECK**

1.If the horn fails to sound:

**1.Horn switch**

- Disconnect the left handlebar switch coupler from the wire harness.
- Check for continuity as follows:  
Pink ① – Black ②

 **CONTINUITY**



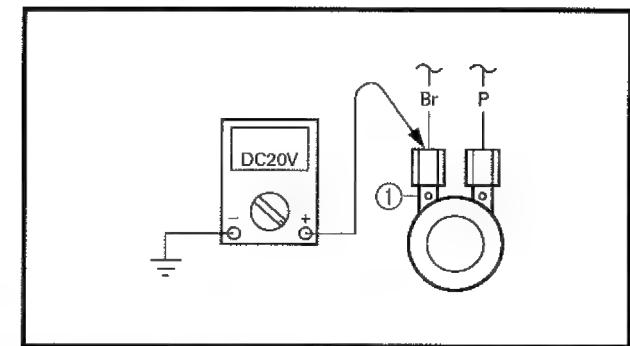
**NO CONTINUITY**



**Replace the left handlebar switch.**

**2.Voltage**

- Connect the pocket tester (DC 20 V) to the horn lead.
- Tester (+) lead → Brown lead ①**  
**Tester (–) lead → Frame ground**



- Turn the main switch to "ON".
- Check the voltage (6 V) of the "Brown" lead at the horn terminal.

 **MEETS SPECIFICATION**

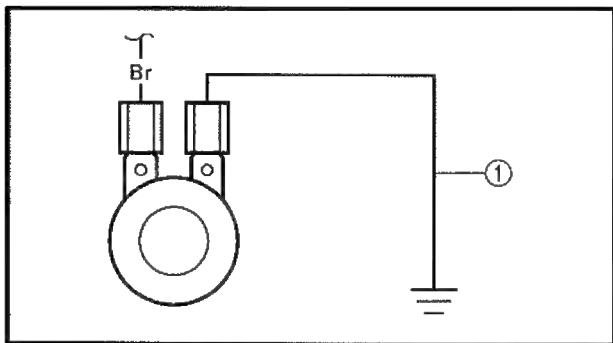
**OUT OF SPECIFICATION**



**The wiring circuit from the main switch to the horn terminal is faulty, repair it.**

**3.Horn**

- Disconnect the "Pink" lead at the horn terminal.
- Connect a jumper lead ① to the horn terminal and ground the jumper lead.
- Turn the main switch to "ON".



**HORN DOES NOT SOUND**

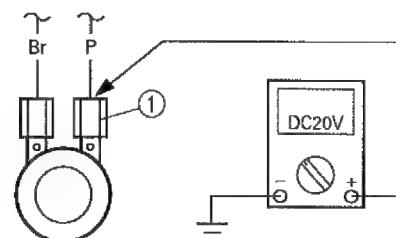
**HORN SOUNDS**

The horn is not faulty.

#### 4. Voltage

- Connect the pocket tester (DC 20 V) to the horn at the "Pink" terminal.

**Tester (+) lead → Pink lead ①**  
**Tester (-) lead → Frame ground**



- Turn the main switch to "ON".
- Check the voltage (6 V) of the "Pink" lead at the horn terminal.

**MEETS SPECIFICATION**

**OUT OF SPECIFICATION**

Replace the horn.

Adjust or replace the horn.

EB806022

2. If the brake light fails to come on:

#### 1. Bulb and bulb socket

- Check the bulb and bulb socket for continuity.

**CONTINUITY**

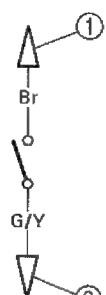
**NO CONTINUITY**

Replace the bulb and/or bulb socket.



## 2.Brake switch

- Disconnect the brake switch leads.
- Check for continuity as follows:  
Brown ① – Green/Yellow ②



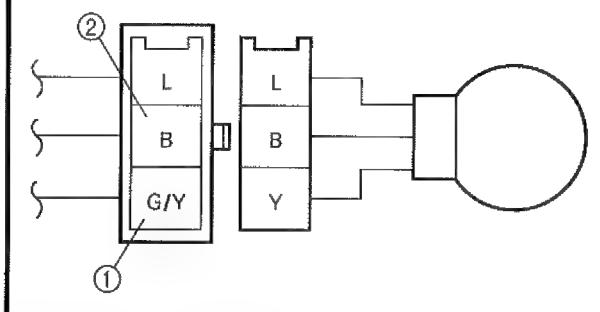
↓ CONTINUITY

NO CONTINUITY

Replace the brake switch.

## 3.Voltage

- Connect the pocket tester (DC 20 V) to the bulb socket connector.
- Tester (+) lead → Green/Yellow terminal ①**  
**Tester (-) lead → Black terminal ②**



OUT OF SPECIFICATION

The wiring circuit from the main switch to the bulb socket connector is faulty, repair it.

↓ MEETS  
SPECIFICATION

This circuit is not faulty.

## 3.If the turn signal fails to blink:

## 1.Bulb and bulb socket

- Check the bulb and bulb socket for continuity.

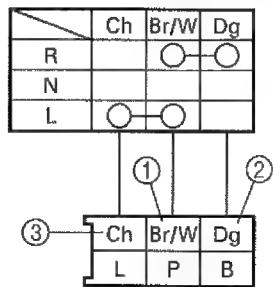
 CONTINUITY

NO CONTINUITY

 Replace the bulb and/or bulb socket.

## 2.Turn switch

- Disconnect the left handlebar switch coupler from the wire harness.
- Check for continuity as follows:  
Brown/White ① – Dark green ②  
Brown/White ① – Chocolate ③



 CONTINUITY

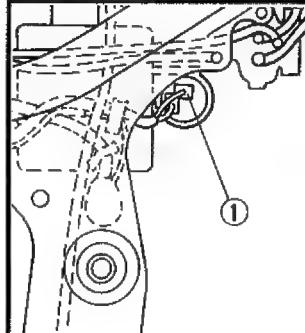
NO CONTINUITY

 Replace the left handlebar switch.

## 3.Voltage

- Connect the pocket tester (DC 20 V) to the flasher relay coupler ①.

**Tester (+) lead → Brown terminal ②**  
**Tester (-) lead → Frame ground**



- Turn the main switch to "ON".
- Check the voltage (6 V) of the "Brown" ① lead at the flasher relay terminal.

 MEETS SPECIFICATION

OUT OF SPECIFICATION

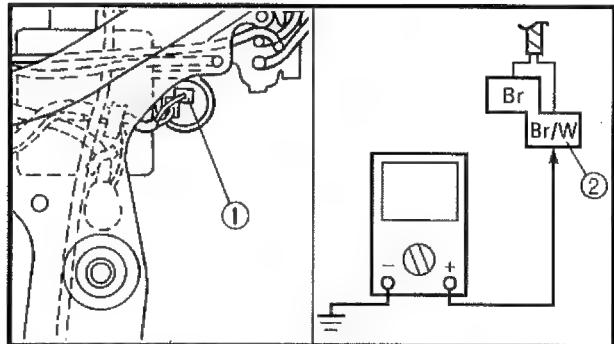
The wiring circuit from the main switch to the flasher relay connector is faulty, repair it.



#### 4.Voltage

- Connect the pocket tester (DC 20 V) to the flasher relay coupler ①.

**Tester (+) lead → Brown/White terminal ②**  
**Tester (-) lead → Frame ground**



OUT OF SPECIFICATION

The flasher relay is faulty, replace it.

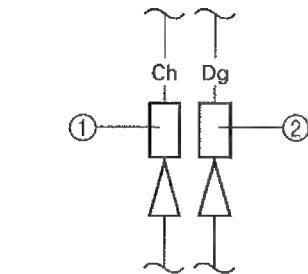


#### 5.Voltage

- Connect the pocket tester (DC 20 V) to the bulb socket connector.

**At the flasher light (left):**  
**Tester (+) lead → Chocolate lead ①**  
**Tester (-) lead → Frame ground**

**At the flasher light (right):**  
**Tester (+) lead → Dark green lead ②**  
**Tester (-) lead → Frame ground**



- Turn the main switch to "ON".
- Turn the turn switch to "L" or "R".
- Check the voltage (6 V) of the "Chocolate" lead or "Dark green" lead on the bulb socket connector.



This circuit is not faulty.

OUT OF SPECIFICATION

The wiring circuit from the turn switch to the bulb socket connector is faulty, repair it.

### 6.If the oil level indicator light fails to come on:

#### 1.Bulb and bulb socket

- Check the bulb and bulb socket for continuity.

 CONTINUITY

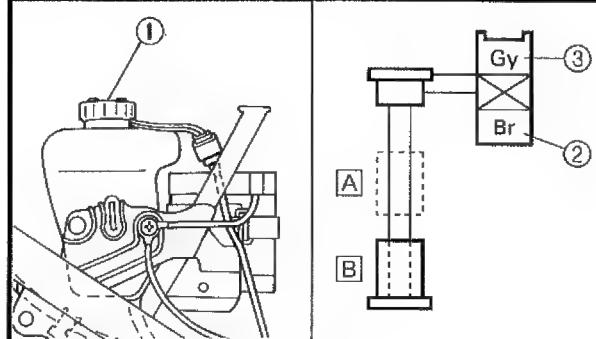
NO CONTINUITY

 Replace the bulb and/or bulb socket.

#### 2.Oil level gauge

- Remove the oil level gauge ① from the oil tank.
- Connect the pocket tester ( $\Omega \times 1$ ) to the oil level gauge.

**Tester (+) lead → Brown ② terminal  
Tester (-) lead → Gray ③ terminal**



- Check the oil level gauge for continuity.

	Switch position	Good condition	Bad condition		
A	Upright position	×	○	×	○
B	Upside down position	○	×	×	○
<b>○: Continuity</b>		<b>✗: Nocontinuity</b>			

 GOOD CONDITION

BAD CONDITION

 Replace the oil level gauge.

#### 3.Wiring connection

- Check the connections of the entire signal system.  
Refer to "WIRING DIAGRAM".

## **CHAPTER 7. APPENDICES**

<b>TROUBLESHOOTING GUIDE.....</b>	<b>158</b>
<b>LB50 II AC/LB80 II AC WIRING DIAGRAM</b>	





7

## CHAPTER 7. APPENDICES

### TROUBLESHOOTING GUIDE

The following guide is not complete in itself. If a problem is found within an individual component mentioned within the chart, refer to the section or chapter involved for inspection procedures.

#### No start or difficult to start

##### Ignition:

Possible Cause	Remedy
No spark	<ol style="list-style-type: none"><li>1. Check ignition main switch</li><li>2. Check wiring, magneto coil</li><li>3. Check the pickup coil</li><li>4. Check high tension lead</li><li>5. Check spark plug</li></ol>
Weak or intermittent spark	<ol style="list-style-type: none"><li>1. Use ignition checker, spark gap test</li><li>2. Check spark plug</li><li>3. Check high tension lead</li><li>4. Check ignition assembly</li></ol>

##### Air/Fuel systems:

Possible Cause	Remedy
No fuel	<ol style="list-style-type: none"><li>1. Check fuel tank</li><li>2. Check petcock</li><li>3. Remove main jet, check fuel flow</li></ol>
Intermittent or poor fuel flow	<ol style="list-style-type: none"><li>1. Clean fuel tank, check cap vent</li><li>2. Clean petcock</li><li>3. Remove carburetor, service</li></ol>
Bad fuel	<ol style="list-style-type: none"><li>1. Flush fuel system, complete</li><li>2. Add fresh fuel, proper grade</li></ol>
Blocked air intake or malfunction	<ol style="list-style-type: none"><li>1. Clean and lube filter</li><li>2. Check reed valve assembly</li></ol>

##### Engine/Exhaust systems:

Possible Cause	Remedy
Incorrect compression pressure	<ol style="list-style-type: none"><li>1. If reading too high, check for excessive carbon</li><li>2. If reading too low, check:<ol style="list-style-type: none"><li>a. Cylinder head gasket</li><li>b. Cylinder base gasket</li><li>c. Piston, rings, cylinder</li></ol></li></ol>
Poor bottom end compression	<ol style="list-style-type: none"><li>1. Check crankcase seals L and R</li></ol>
Blocked exhaust system	<ol style="list-style-type: none"><li>1. Check muffler</li><li>2. Check exhaust port carbon formation</li><li>3. Check exhaust pipe for internal damage</li></ol>

## **Poor idle and/or low speed performance**

### **Ignition system:**

Possible Cause	Remedy
Spark plug fouled or incorrect gap	Clean and gap or replace if necessary
Incorrect ignition timing	Check the ignition system
Weak spark	Check ignition coil

### **Air/Fuel systems:**

Possible Cause	Remedy
Tank cap vent plugged	Clean or repair as necessary
Fuel petcock plugged	Clean or repair as necessary
Carburetor slow speed system inoperative	Clean or repair as necessary
Pilot screw out of adjustment or plugged	Clean or repair as necessary
Carburetor float level incorrect	Clean or repair as necessary
Starter lever on	Starter lever off
Air leak	Repair
Carburetor not level	Level

## **Engine/Exhaust systems (See "No start")**

### **Poor mid-range and high speed performance**

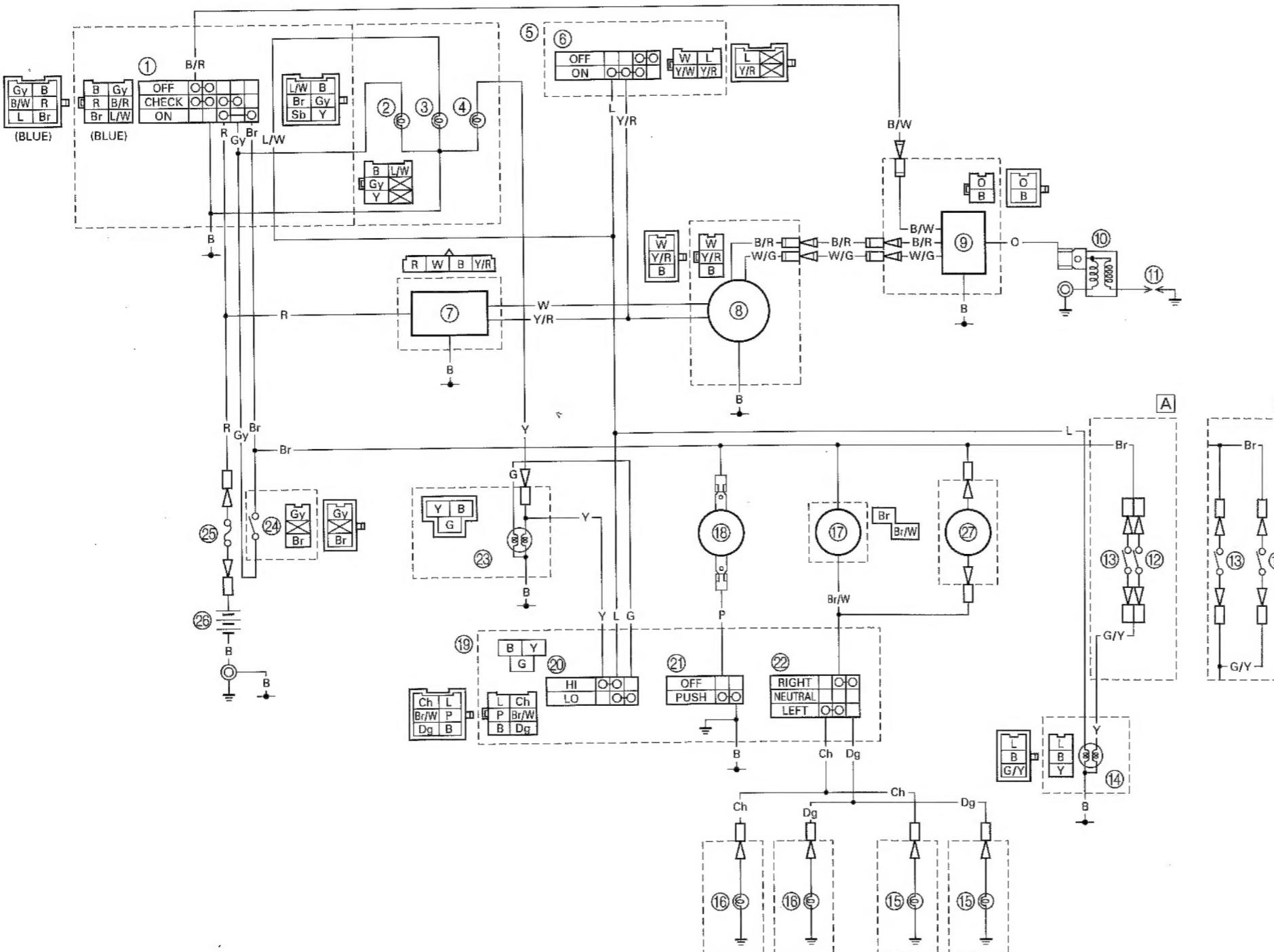
### **Ignition system:**

Possible Cause	Remedy
Spark plug incorrect	Clean and gap or change plug if necessary
Ignition timing incorrect	Check the ignition system

### **Air/Fuel systems:**

Possible Cause	Remedy
Dirty air filter element	Clean
Carburetor float level incorrect	Measure and change if required
Incorrect main jet size	Remove jet and check size
Incorrect jet needle notch	Check position of clip in needle
Cracked or leaking reeds	Replace
Carburetor not level	Level

## LB50 II AC/LB80 II AC WIRING DIAGRAM



- ① Main switch
- ② Oil level indicator light
- ③ Meter light
- ④ High beam indicator light
- ⑤ Right handlebar switch
- ⑥ Light switch
- ⑦ Rectifier/regulator
- ⑧ CDI magneto
- ⑨ CDI unit
- ⑩ Ignition coil
- ⑪ Spark plug
- ⑫ Rear brake switch
- ⑬ Front brake switch
- ⑭ Tail/brake light
- ⑮ Rear turn signal
- ⑯ Front turn signal
- ⑰ Flasher relay
- ⑱ Horn
- ⑲ Left handlebar switch
- ⑳ Dimmer switch
- ㉑ Horn switch
- ㉒ Turn switch
- ㉓ Headlight
- ㉔ Oil level gauge
- ㉕ Fuse
- ㉖ Battery
- ㉗ Audio pilot (for LB50 II AC)

A For LB50 II AC  
B For LB80 II AC

### COLOR CODE

B .....	Black
Br.....	Brown
Ch.....	Chocolate
Dg.....	Dark green
G.....	Green
Gy.....	Gray
L .....	Blue
O.....	Orange
P .....	Pink
R .....	Red
Sb.....	Sky blue
W .....	White

Y .....	Yellow
B/R.....	Black/Red
B/W .....	Black/White
Br/W .....	Brown/White
G/Y .....	Green/Yellow
L/W.....	Blue/White
W/G.....	White/Green
Y/R.....	Yellow/Red
Y/W .....	Yellow/White